

Lee Creek & Lake Fort Smith Water Treatment Plants

FLUORIDE FEED SYSTEMS

City Project No. 14-10-C1

Contract Drawings

June 2015

81174



Dana Bruner
This document has been digitally signed.
06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

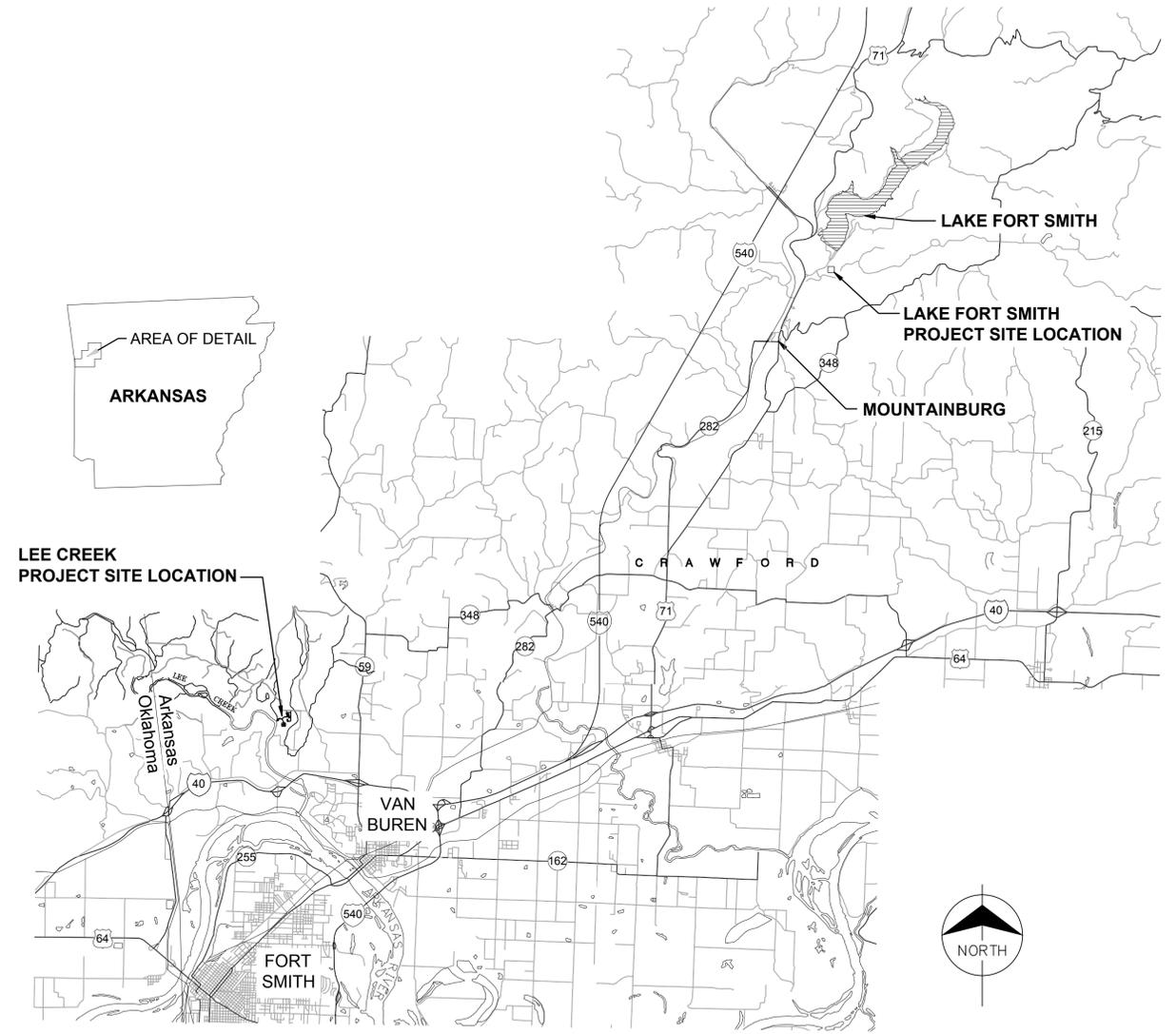


9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

Contract Drawings

GENERAL DRAWINGS

DWG. NO.	TITLE
-	COVER
-	INDEX
C101	LAKE FORT SMITH CIVIL NOTES, LEGEND, AND ABBREVIATIONS
C102	LAKE FORT SMITH SITE LAYOUT
C201	LEE CREEK CIVIL NOTES, LEGEND, AND ABBREVIATIONS
C202	LEE CREEK SITE LAYOUT
A001	ARCHITECTURAL LEGEND /ABBREVIATION AND GENERAL NOTES
A101	LAKE FORT SMITH PLANS AND SECTIONS
A102	LAKE FORT SMITH BUILDING ELEVATIONS
A201	LEE CREEK PLANS AND SECTIONS
A202	LEE CREEK BUILDING ELEVATIONS
A301	SECTIONS AND DETAILS SHEET 1 OF 2
A302	SECTIONS AND DETAILS SHEET 2 OF 2
S001	STRUCTURAL LEGEND
S002	STRUCTURAL STANDARD DETAILS SHEET 1 OF 3
S003	STRUCTURAL STANDARD DETAILS SHEET 2 OF 3
S004	STRUCTURAL STANDARD DETAILS SHEET 3 OF 3
S005	STRUCTURAL MASONRY DETAILS
S101	LAKE FORT SMITH FLUORIDE BUILDING FOUNDATION PLAN AND SECTIONS
S102	LAKE FORT SMITH FLUORIDE BUILDING ROOF PLAN, SECTIONS AND DETAILS
S103	LAKE FORT SMITH BULK STORAGE CONTAINMENT PLAN AND SECTIONS
S201	LEE CREEK FLUORIDE BUILDING FOUNDATION PLAN AND SECTIONS
S202	LEE CREEK FLUORIDE BUILDING ROOF PLAN, SECTIONS AND DETAILS
S203	LEE CREEK BULK STORAGE CONTAINMENT PLAN AND SECTIONS
D001	PROCESS LEGEND AND GENERAL NOTES
D002	PROCESS AND INSTRUMENTATION LEGEND
D003	PROCESS AND MISCELLANEOUS DETAILS
D004	PROCESS AND INSTRUMENTATION DIAGRAM
D101	LAKE FORT SMITH FLUORIDE BUILDING LAYOUT
D102	LAKE FORT SMITH BULK STORAGE LAYOUT
D103	LAKE FORT SMITH FLUORIDE SITE LAYOUT
D201	LEE CREEK FLUORIDE BUILDING LAYOUT
D202	LEE CREEK BULK STORAGE LAYOUT
D203	LEE CREEK FLUORIDE SITE LAYOUT
D204	LEE CREEK FLUORIDE INJECTION DETAILS
ML001	HVAC, PLUMBING AND MECHANICAL LEGEND ABBREVIATIONS AND GENERAL NOTES
M001	HVAC SCHEDULES AND SEQUENCE OF OPERATIONS
M101	LAKE FORT SMITH HVAC PLANS
M201	LEE CREEK HVAC PLANS
P001	PLUMBING MISCELLANEOUS DETAILS
P101	LAKE FORT SMITH FLUORIDE BUILDING LAYOUT
P201	LEE CREEK FLUORIDE BUILDING LAYOUT
E001	ELECTRICAL LEGEND
E002	TYPICAL WIRING SCHEMATICS SHEET 1 OF 2
E003	TYPICAL WIRING SCHEMATICS SHEET 2 OF 2
E004	LAKE FORT SMITH PARTIAL NETWORK COMMUNICATION DIAGRAM
E005	LEE CREEK PARTIAL NETWORK COMMUNICATION DIAGRAM
E101	ELECTRICAL SITE PLAN
E102	LAKE FORT SMITH FLUORIDE BUILDING ELECTRICAL PLANS
E103	LAKE FORT SMITH ONE-LINE DIAGRAM AND PANELBOARD SCHEDULES
E104	BACKWASH PUMP STATION ELECTRICAL PLAN
E201	LEE CREEK ELECTRICAL SITE PLAN
E202	LEE CREEK FLUORIDE BUILDING ELECTRICAL PLANS
E203	LEE CREEK ONE-LINE DIAGRAM AND PANELBOARD SCHEDULES
E204	FINISHED WATER PUMP STATION ELECTRICAL PLAN



ONE OR TWO CHARACTER DISCIPLINE DESIGNATOR (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON DRAWINGS WITHIN THE SAME DISCIPLINE)

LETTER OR NUMBER DESIGNATOR

DRAWING SEQUENCE NUMBER INDICATES WHERE TITLE IS LOCATED (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON THE SAME DRAWING)

SECTION, DETAIL, AND ELEVATION SYMBOL IDENTIFIERS

SECTION CALLOUT EXAMPLE

DETAIL CALLOUT EXAMPLE

ELEVATION CALLOUT EXAMPLE

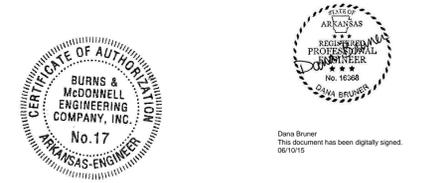
THE WORD "SECTION" MAY BE REPLACED WITH "ELEVATION" OR "DETAIL"

SECTION, DETAIL, OR ELEVATION TITLE EXAMPLE

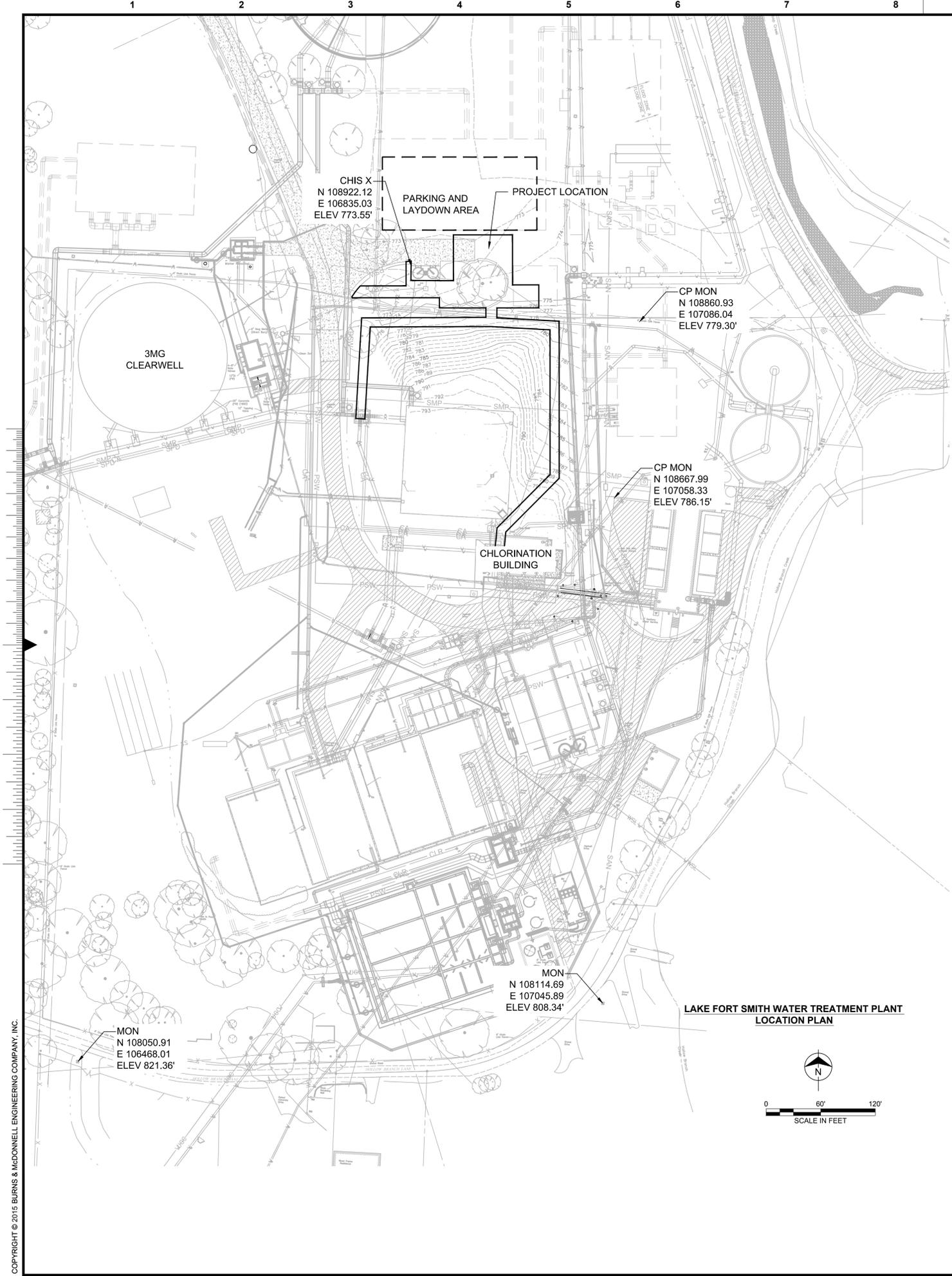
SECTION, DETAIL, AND ELEVATION IDENTIFICATION SYSTEM

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

BURNS & MCDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17



Index



ABBREVIATIONS

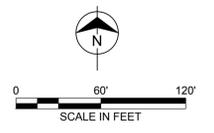
APPROX	APPROXIMATE
CL	CENTER LINE
CONST	CONSTRUCT
DIA	DIAMETER
DND	DO NOT DISTURB
DWG	DRAWING
E	EASTING
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
EL OR ELEV	ELEVATION
EST	ESTIMATED
FF	FINISHED FLOOR
FT	FEET
INV	INVERT
L	LENGTH
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
N	NORTHING
NAD	NORTH AMERICAN DATUM
NAVD	NORTH AMERICAN VERTICAL DATUM
NGS	NATIONAL GEODETIC SURVEY
NO	NUMBER
PL	PROPERTY LINE
ROW	RIGHT OF WAY
S	SLOPE
SCP	SURVEY CONTROL POINT
SEC	SECTION
SF	SQUARE FEET
SHT	SHEET
TEMP	TEMPORARY
TOW	TOP OF WALL
TYP	TYPICAL

- GENERAL NOTES**
1. BASIS OF BEARINGS: LOCAL LAKE FORT SMITH DAM AND RESERVOIR ENLARGEMENT PROJECT SYSTEM.
 2. COORDINATES ARE BASED ON A LOCAL GRID: THE SAME GRID USED FOR THE LAKE FORT SMITH DAM AND RESERVOIR ENLARGEMENT PROJECT.
 3. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO NAVD88.
 4. THE LOCATION OF THE EXISTING UTILITIES SHOWN ARE APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
 5. ALL SLOPES SHALL BE 4:1 MAXIMUM UNLESS OTHERWISE NOTED.
 6. GRADING SHALL BE UNIFORM BETWEEN INDICATED ELEVATION CALLOUTS.
 7. ALL DISTURBED AREAS NOT DESIGNATED TO RECEIVE SURFACING SHALL RECEIVE 4" MINIMUM TOPSOIL AND SEEDING.
 8. CONTRACTOR SHALL FLAG AND PROTECT ALL SURVEY MARKERS AND MONUMENTS.
 9. BACKGROUND SURVEY WAS CREATED BY MICKLE WAGNER COLEMAN ON NOVEMBER 2014.
 10. CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION STAKING.
 11. CONTRACTOR'S BID SHALL INCLUDE COSTS ASSOCIATED WITH ANY RESTORATION OF ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITY TO PRE-CONSTRUCTION CONDITIONS.
 12. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF THE CONSTRUCTION WORKERS AND THE PUBLIC.

- EROSION CONTROL NOTES**
1. THE EROSION CONTROL DEVICES ON THIS PACKAGE SHALL BE CONSIDERED THE MINIMUM REQUIREMENTS FOR EROSION CONTROL PROTECTION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL DEVICES AS REQUIRED AND AS DIRECTED BY THE OWNER TO PREVENT RUNOFF FROM LEAVING THE PROJECT SITE.
 2. EROSION CONTROL DEVICES SHALL BE INSTALLED AT LAYDOWN, STOCKPILE, TRAILERS, AND PARKING AREA.
 3. CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES UNTIL FINAL ACCEPTANCE BY THE OWNER. NO EXTRA PAYMENT WILL BE MADE FOR REPAIRING EROSION CONTROL DEVICES.
 4. CONTRACTOR SHALL INSPECT ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL AND REPAIR EROSION CONTROL DEVICES AS NECESSARY. NO EXTRA PAYMENT WILL BE MADE FOR REPAIRING EROSION CONTROL DEVICES.
 5. TOPSOIL AND SEED ALL AREAS DISTURBED DURING CONSTRUCTION TO THEIR PRE-CONSTRUCTION CONDITION UNLESS THEY ARE DESIGNATED TO RECEIVE OTHER SURFACING.

LEGEND

EXISTING		NEW
▲	CONTROL POINT	
⊠	ELECTRIC TRANSFORMER	
⊞	ELECTRIC VAULT	
⊙	POWER POLE	
○	MANHOLE	
⊗	WATER VALVE	
—G—	GAS LINE	
—T—	TELEPHONE LINE	
—SS—	SANITARY SEWER LINE	
—OE—	OVERHEAD ELECTRIC LINE	—UE—
—UGE—	UNDERGROUND ELECTRIC LINE	
—W—	WATERLINE	—850—
—850—	MAJOR CONTOURS	—848—
—848—	MINOR CONTOURS	
---	DRAIN LINE	
—PSW—	PLANT SERVICE WATER LINE	
—TW—	TEPID WATER LINE	
▢	CONCRETE	
▨	ASPHALT	



no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



BURNS & McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	DECEMBER 12, 2014	detailed	D. WRAY
designed	D. WRAY	checked	S. HANSEN

The City of Fort Smith
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

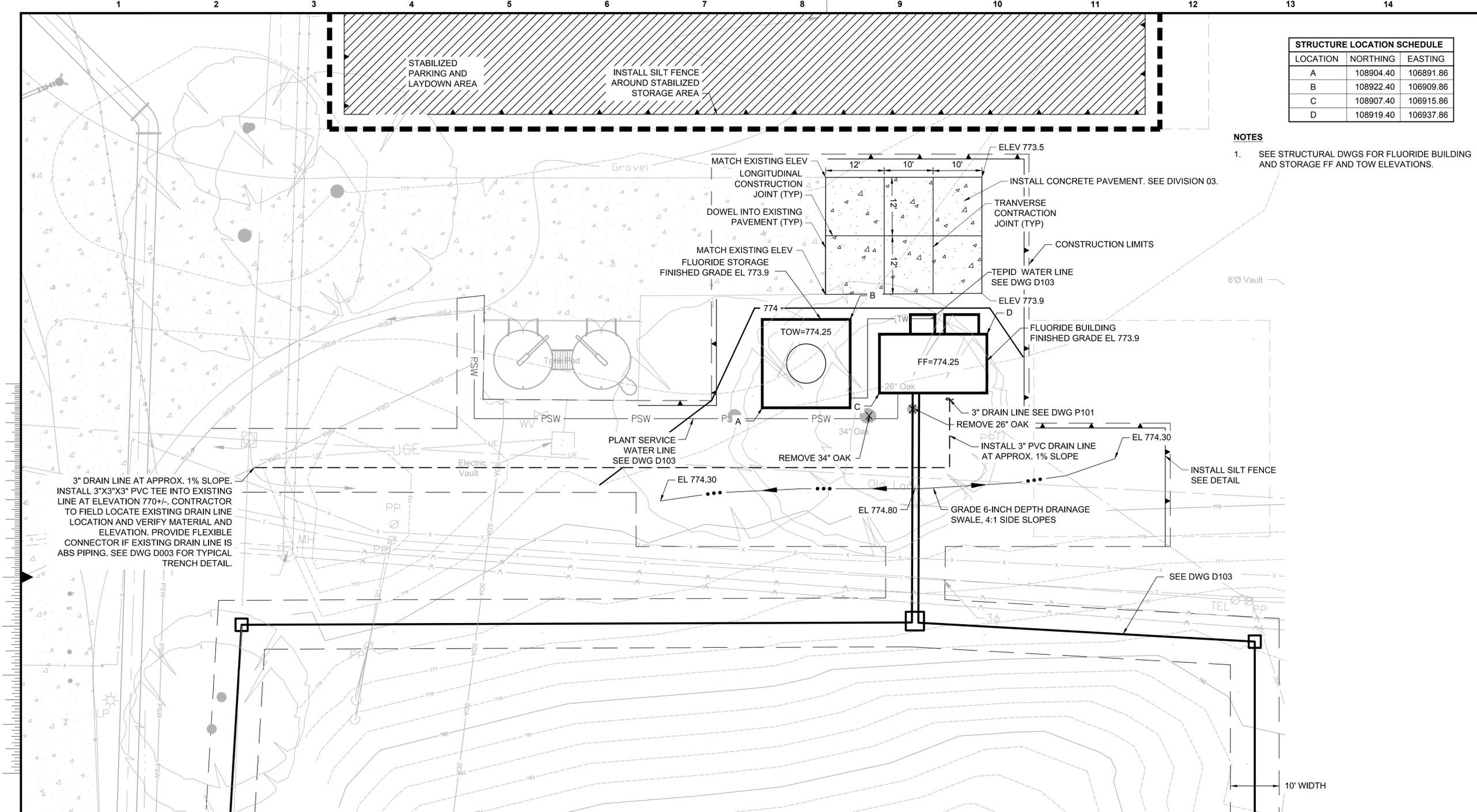


FLUORIDE FEED SYSTEMS
LAKE FORT SMITH
CIVIL NOTES, LEGEND, AND
ABBREVIATIONS

project	81174	contract	
drawing	C101	rev.	0
sheet	of	sheets	
file 81174_C101_C201.DWG			

This document has been digitally signed & sealed.
Jun 10 2015 2:58 PM

COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.



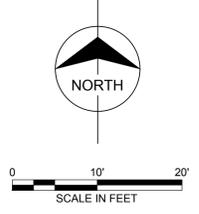
STRUCTURE LOCATION SCHEDULE		
LOCATION	NORTHING	EASTING
A	108904.40	106891.86
B	108922.40	106909.86
C	108907.40	106915.86
D	108919.40	106937.86

NOTES
 1. SEE STRUCTURAL DWGS FOR FLUORIDE BUILDING AND STORAGE FF AND TOW ELEVATIONS.

3" DRAIN LINE AT APPROX. 1% SLOPE. INSTALL 3"x3" PVC TEE INTO EXISTING LINE AT ELEVATION 770+/- . CONTRACTOR TO FIELD LOCATE EXISTING DRAIN LINE LOCATION AND VERIFY MATERIAL AND ELEVATION. PROVIDE FLEXIBLE CONNECTOR IF EXISTING DRAIN LINE IS ABS PIPING. SEE DWG D003 FOR TYPICAL TRENCH DETAIL.

Scale For Microfitting
 Millimeters

Inches



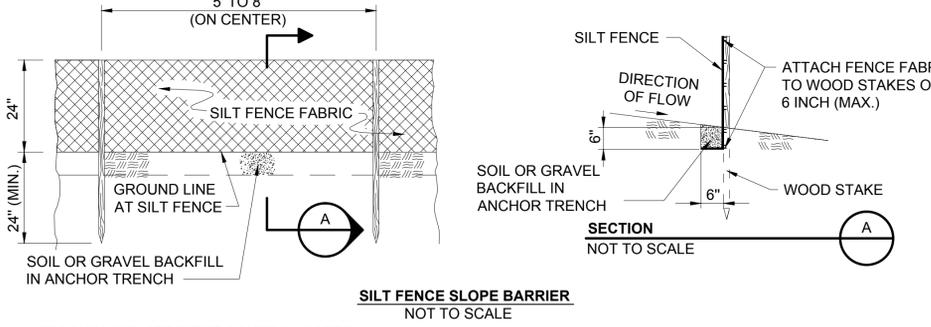
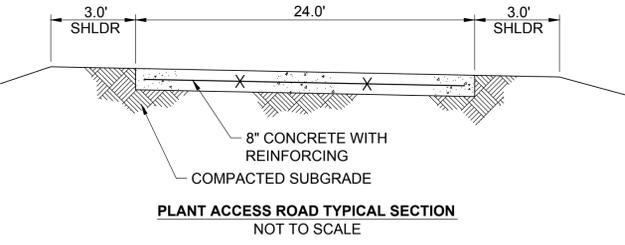
BURNS & MCDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	DECEMBER 12, 2014	detailed	D. WRAY
designed	D. WRAY	checked	S. HANSEN

The City of Fort Smith
 LEE CREEK & LAKE FORT SMITH
 WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
 LAKE FORT SMITH
 SITE LAYOUT

project	81174	contract	
drawing	C102	rev.	0
sheet	of	sheets	
file 81174_C102_C202.DWG			



- PAVEMENT NOTES:**
- SUBGRADES SHALL BE PROOF-ROLLED TO MAKE SURE THERE ARE NO SOFT AREAS BEFORE PLACEMENT OF SUB-BASE OR PAVEMENT.
 - ALL CONCRETE PAVEMENT SHALL BE REINFORCED AND JOINTED PER CITY OF FORT SMITH STANDARDS.
 - SEE CITY OF FORT SMITH STANDARD DRAWING ST5-P.C. CONCRETE PAVEMENT FOR JOINTING DETAILS.
 - DOWEL AND TIE BARS SHALL BE ALIGNED VERTICALLY AND HORIZONTALLY WITHIN 3 DEGREES OF TRUE ALIGNMENT IN ALL DIRECTIONS AND PROVIDE A MINIMUM EMBEDMENT LENGTH OF 6 INCHES ON EITHER SIDE OF THE JOINT.
 - ALL JOINTS SHALL INTERSECT EDGE OF PAVEMENT AT 90° ANGLES.

- EROSION AND SEDIMENT CONTROL NOTES:**
- ALL EROSION CONTROL PRODUCTS, INCLUDING BUT NOT LIMITED TO SILT FENCE, SHALL CONFORM TO THE SPECIFICATIONS.
 - SILT FENCE SHALL BE INSPECTED WEEKLY AND AFTER EVERY STORM EVENT OF 1/2" OR GREATER. MAINTAIN AND REPAIR AS NECESSARY.
 - AREAS THAT HAVE BEEN EXCAVATED OR CLEARED BUT WILL NOT BE CONSTRUCTED OR PLANTED FOR SEVEN DAYS SHALL BE STABILIZED WITH TEMPORARY MULCH OR VEGETATION.
 - WHERE SEDIMENT IS TRANSPORTED ONTO THE EXISTING ACCESS ROAD, CONTRACTOR SHALL CLEAN THE ROAD THOROUGHLY AT THE END OF EACH DAY.
 - STABILIZED LAYDOWN AREA FOR PARKING, EQUIPMENT AND MATERIALS STORAGE, LOADING AND UNLOADING SHALL BE STABILIZED WITH 3" MINIMUM THICKNESS GRANULAR MATERIAL (GRAVEL OR RECYCLED CONCRETE). ANY GRADING DONE IN THESE AREAS MUST BE RETURNED TO PRE-CONSTRUCTION CONDITION (SLOPES, GRADES, SWALES) AT THE END OF CONSTRUCTION.



This document has been digitally signed & sealed.
 Jun 10 2015 2:59 PM

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

ABBREVIATIONS

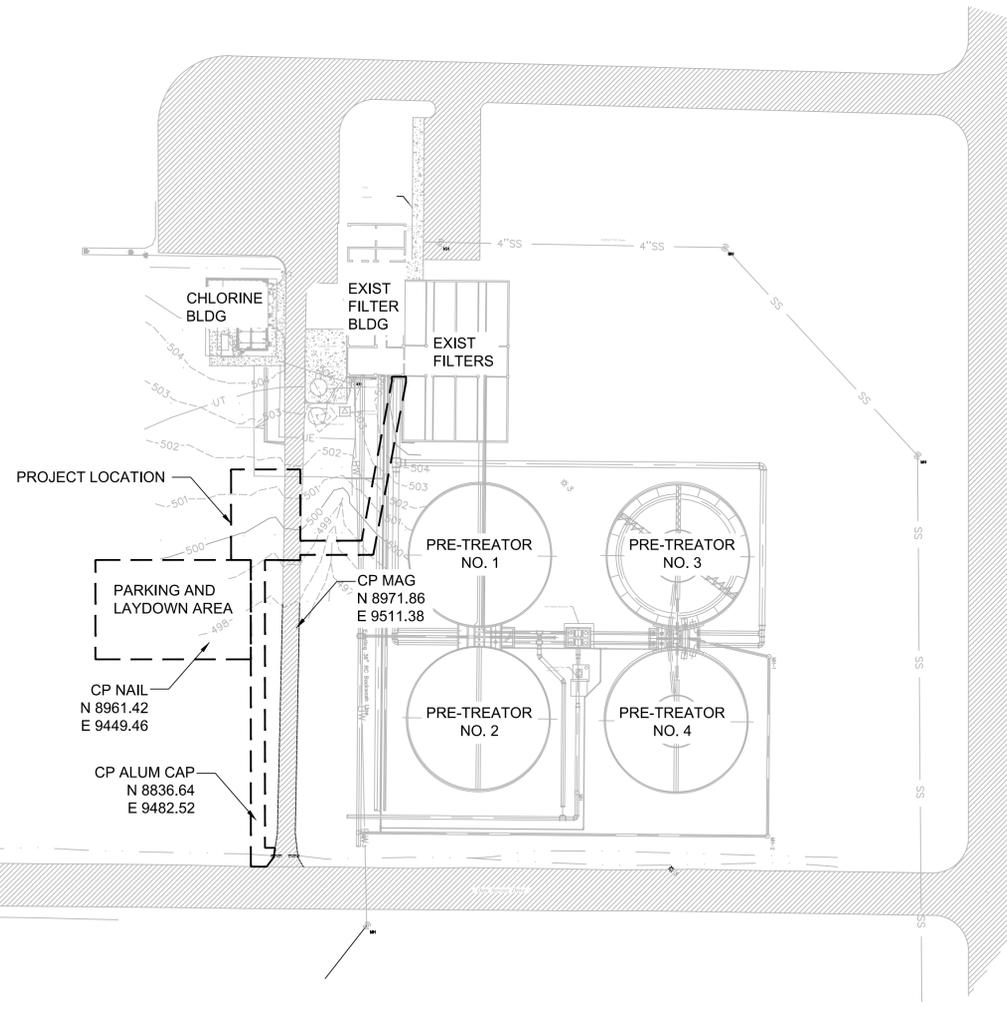
APPROX	APPROXIMATE
CL	CENTER LINE
CONST	CONSTRUCT
DIA	DIAMETER
DND	DO NOT DISTURB
DWG	DRAWING
E	EASTING
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
EL OR ELEV	ELEVATION
EST	ESTIMATED
FF	FINISHED FLOOR
FT	FEET
INV	INVERT
L	LENGTH
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
N	NORTHING
NAD	NORTH AMERICAN DATUM
NAVD	NORTH AMERICAN VERTICAL DATUM
NGS	NATIONAL GEODETIC SURVEY
NO	NUMBER
PL	PROPERTY LINE
ROW	RIGHT OF WAY
S	SLOPE
SCP	SURVEY CONTROL POINT
SEC	SECTION
SF	SQUARE FEET
SHT	SHEET
TEMP	TEMPORARY
TOW	TOP OF WALL
TYP	TYPICAL

GENERAL NOTES

1. BASIS OF BEARINGS: LOCAL LAKE FORT SMITH DAM AND RESERVOIR ENLARGEMENT PROJECT SYSTEM.
2. COORDINATES ARE BASED ON A LOCAL GRID: THE SAME GRID USED FOR THE LAKE FORT SMITH DAM AND RESERVOIR ENLARGEMENT PROJECT.
3. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO NAVD88.
4. THE LOCATION OF THE EXISTING UTILITIES SHOWN ARE APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
5. ALL SLOPES SHALL BE 4:1 MAXIMUM UNLESS OTHERWISE NOTED.
6. GRADING SHALL BE UNIFORM BETWEEN INDICATED ELEVATION CALLOUTS.
7. ALL DISTURBED AREAS NOT DESIGNATED TO RECEIVE SURFACING SHALL RECEIVE 4" MINIMUM TOPSOIL AND SEEDING.
8. CONTRACTOR SHALL FLAG AND PROTECT ALL SURVEY MARKERS AND MONUMENTS.
9. BACKGROUND SURVEY WAS CREATED BY MICKLE WAGNER COLEMAN ON NOVEMBER 2014.
10. CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION STAKING.
11. CONTRACTOR'S BID SHALL INCLUDE COSTS ASSOCIATED WITH ANY RESTORATION OF ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITY TO PRE-CONSTRUCTION CONDITIONS.
12. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF THE CONSTRUCTION WORKERS AND THE PUBLIC.

EROSION CONTROL NOTES

1. THE EROSION CONTROL DEVICES ON THIS PACKAGE SHALL BE CONSIDERED THE MINIMUM REQUIREMENTS FOR EROSION CONTROL PROTECTION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL DEVICES AS REQUIRED AND AS DIRECTED BY THE OWNER TO PREVENT RUNOFF FROM LEAVING THE PROJECT SITE.
2. EROSION CONTROL DEVICES SHALL BE INSTALLED AT LAYDOWN, STOCKPILE, TRAILERS, AND PARKING AREA.
3. CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES UNTIL FINAL ACCEPTANCE BY THE OWNER. NO EXTRA PAYMENT WILL BE MADE FOR REPAIRING EROSION CONTROL DEVICES.
4. CONTRACTOR SHALL INSPECT ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL AND REPAIR EROSION CONTROL DEVICES AS NECESSARY. NO EXTRA PAYMENT WILL BE MADE FOR REPAIRING EROSION CONTROL DEVICES.
5. TOPSOIL AND SEED ALL AREAS DISTURBED DURING CONSTRUCTION TO THEIR PRE-CONSTRUCTION CONDITION UNLESS THEY ARE DESIGNATED TO RECEIVE OTHER SURFACING.



LEE CREEK WATER TREATMENT PLANT LOCATION PLAN



0 60' 120'
SCALE IN FEET

LEGEND

EXISTING		NEW
▲	CONTROL POINT	— UE —
⊠	ELECTRIC TRANSFORMER	— 850 —
⊙	ELECTRIC VAULT	- - - 848 - - -
⊕	POWER POLE	- - - - -
⊙	MANHOLE	- - - - -
⊙	MANHOLE	- - - - -
⊕	WATER VALVE	- - - - -
⊕	WATER VALVE	- - - - -
— G —	GAS LINE	- - - - -
— T —	TELEPHONE LINE	- - - - -
— SS —	SANITARY SEWER LINE	- - - - -
— OE —	OVERHEAD ELECTRIC LINE	- - - - -
— UGE —	UNDERGROUND ELECTRIC LINE	- - - - -
— W —	WATERLINE	- - - - -
— 850 —	MAJOR CONTOURS	- - - - -
— 848 —	MINOR CONTOURS	- - - - -
	DRAIN LINE	- - - - -
	PLANT SERVICE WATER LINE	- - - - -
	TEPID WATER LINE	- - - - -
⊠	CONCRETE	⊠
▨	ASPHALT	▨



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	DECEMBER 12, 2014	detailed	D. WRAY
designed	D. WRAY	checked	S. HANSEN

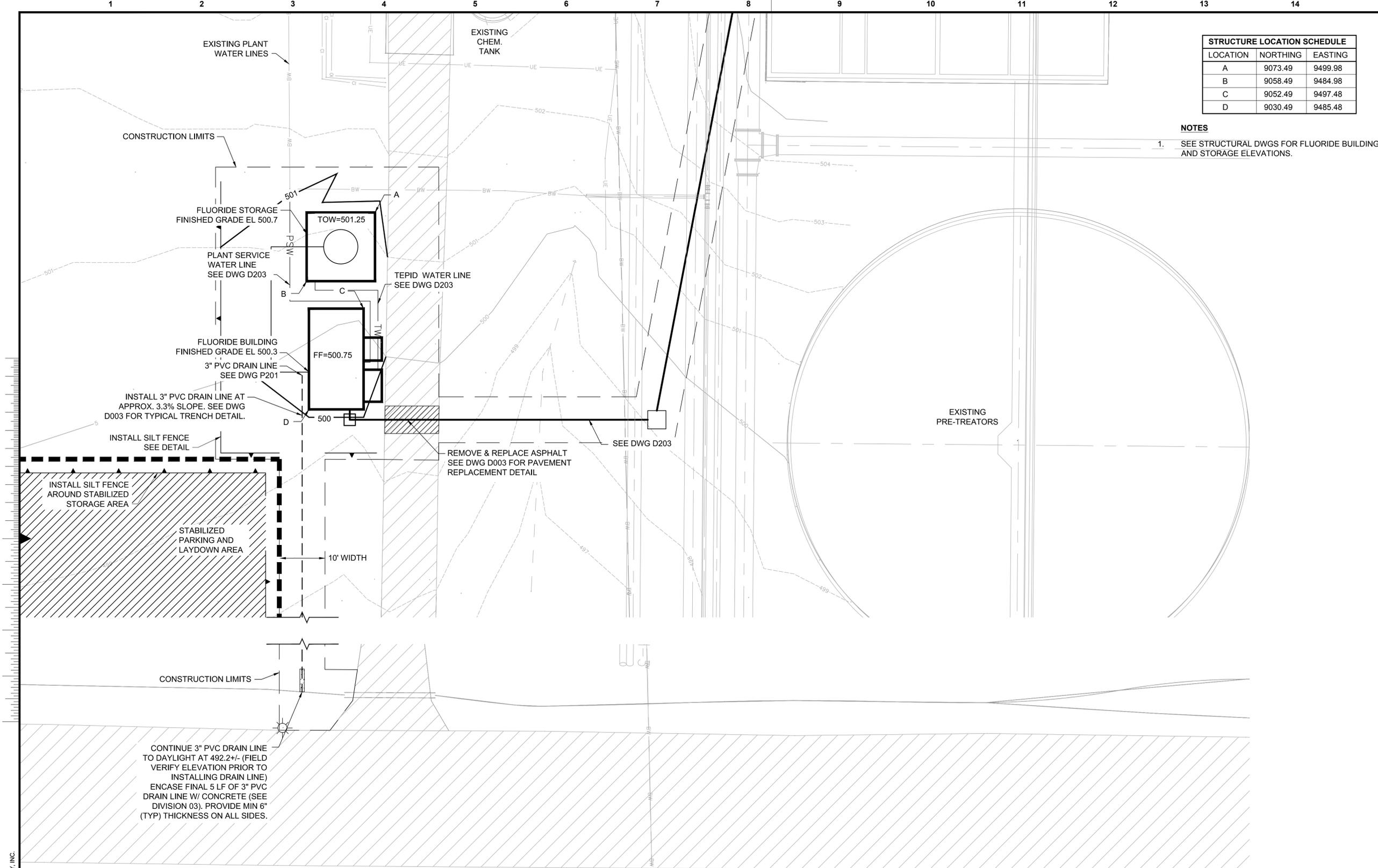


LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS



This document has been digitally signed & sealed.
Jun 10 2015 3:00 PM

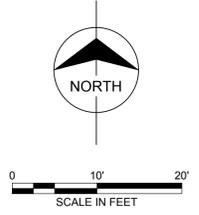
FLUORIDE FEED SYSTEMS	
LEE CREEK CIVIL NOTES, LEGEND, AND ABBREVIATIONS	
project	contract
81174	
drawing	rev.
C201	0
sheet	of sheets
file 81174_C101_C201.DWG	



STRUCTURE LOCATION SCHEDULE		
LOCATION	NORTHING	EASTING
A	9073.49	9499.98
B	9058.49	9484.98
C	9052.49	9497.48
D	9030.49	9485.48

NOTES
 1. SEE STRUCTURAL DWGS FOR FLUORIDE BUILDING AND STORAGE ELEVATIONS.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



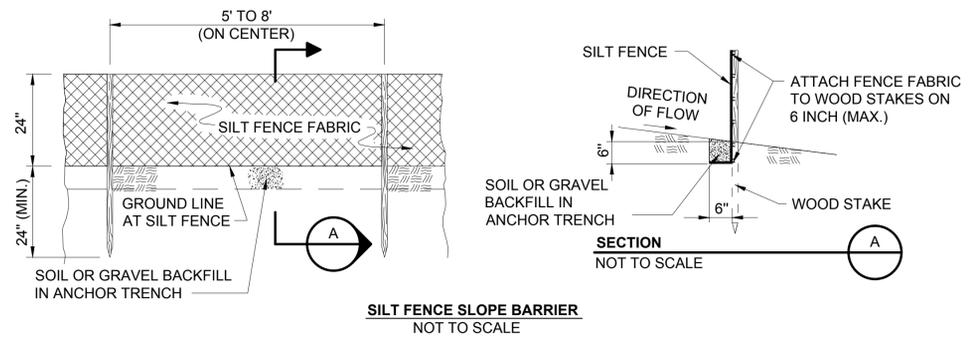
**BURNS
 McDONNELL**
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSE NO. 17

date	DECEMBER 12, 2014	detailed	D. WRAY
designed	D. WRAY	checked	S. HANSEN

The City of
Fort Smith
 ARKANSAS
 LEE CREEK & LAKE FORT SMITH
 WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
 LEE CREEK
 SITE LAYOUT

project	81174	contract	
drawing	C202	rev.	0
sheet	of	sheets	
file 81174_C102_C202.DWG			

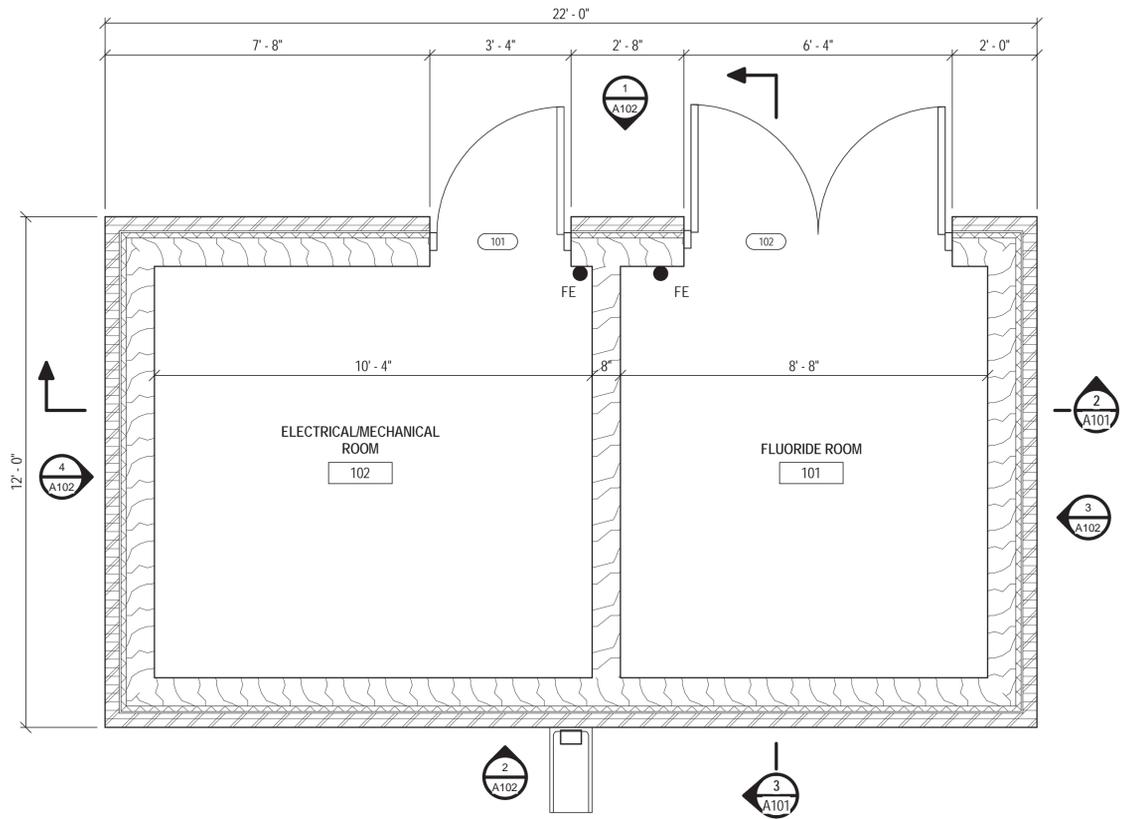


- EROSION AND SEDIMENT CONTROL NOTES:**
- ALL EROSION CONTROL PRODUCTS, INCLUDING BUT NOT LIMITED TO SILT FENCE, SHALL CONFORM TO THE SPECIFICATIONS.
 - SILT FENCE SHALL BE INSPECTED WEEKLY AND AFTER EVERY STORM EVENT OF 1/2" OR GREATER. MAINTAIN AND REPAIR AS NECESSARY.
 - AREAS THAT HAVE BEEN EXCAVATED OR CLEARED BUT WILL NOT BE CONSTRUCTED OR PLANTED FOR SEVEN DAYS SHALL BE STABILIZED WITH TEMPORARY MULCH OR VEGETATION.
 - WHERE SEDIMENT IS TRANSPORTED ONTO THE EXISTING ACCESS ROAD, CONTRACTOR SHALL CLEAN THE ROAD THOROUGHLY AT THE END OF EACH DAY.
 - STABILIZED LAYDOWN AREA FOR PARKING, EQUIPMENT AND MATERIALS STORAGE, LOADING AND UNLOADING SHALL BE STABILIZED WITH 3" MINIMUM THICKNESS GRANULAR MATERIAL (GRAVEL OR RECYCLED CONCRETE). ANY GRADING DONE IN THESE AREAS MUST BE RETURNED TO PRE-CONSTRUCTION CONDITION (SLOPES, GRADES, SWALES) AT THE END OF CONSTRUCTION.



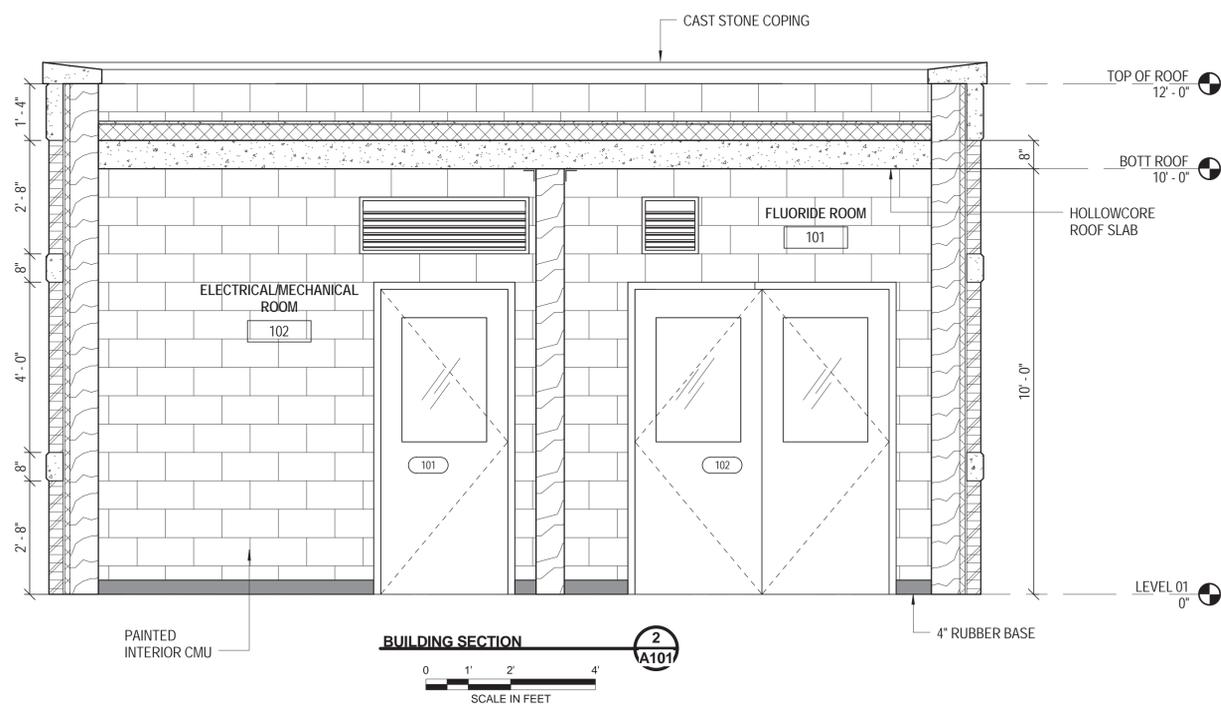
This document has been digitally signed & sealed.
 Jun 10 2015 3:01 PM

COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.

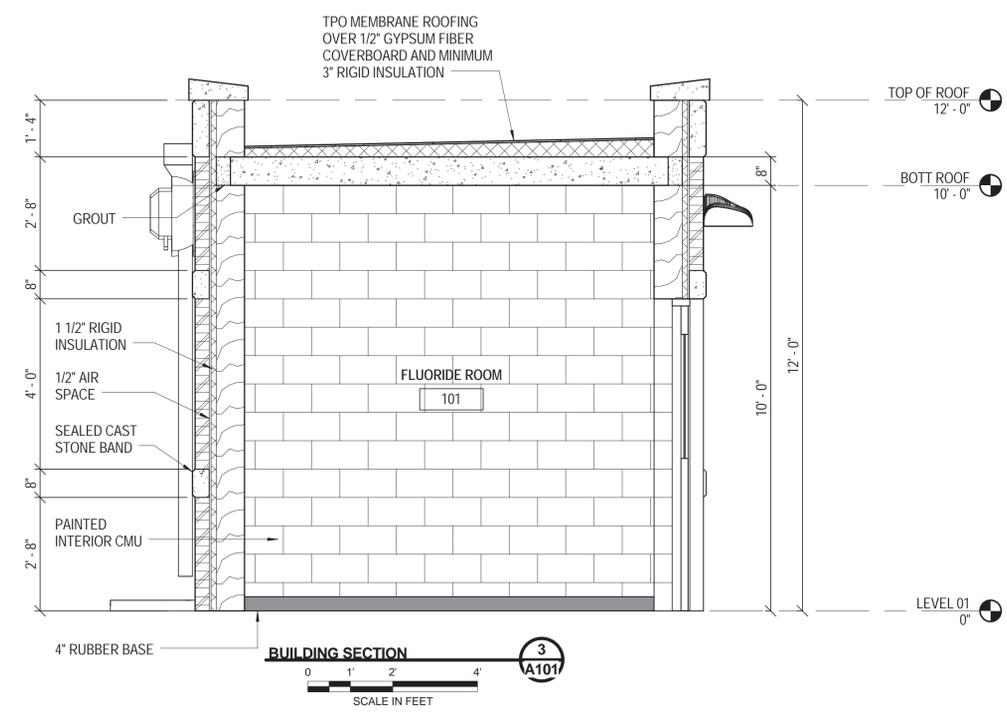


FLOOR PLAN
SCALE IN FEET

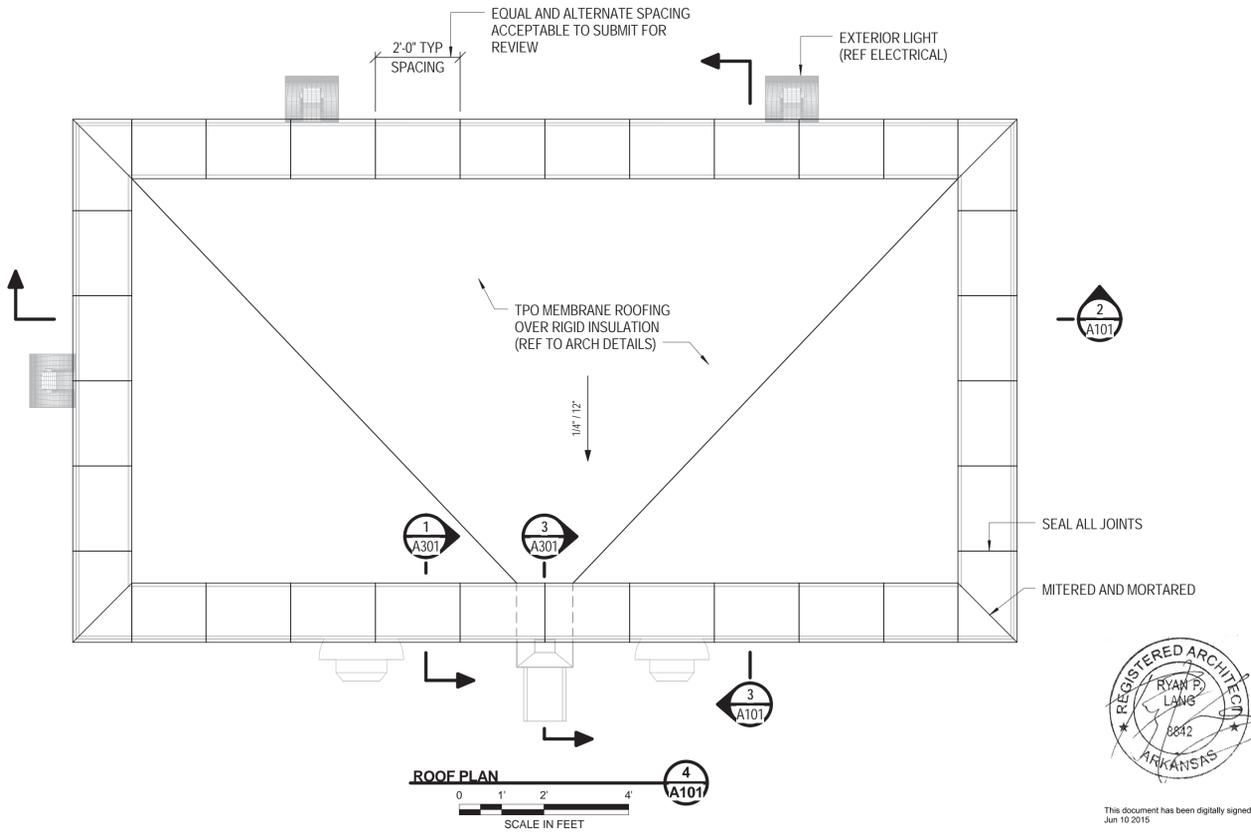
GENERAL NOTES:
1. COAT WALLS AND FLOORS IN BOTH ROOMS.



BUILDING SECTION
SCALE IN FEET



BUILDING SECTION
SCALE IN FEET



ROOF PLAN
SCALE IN FEET

no.	date	by	ckd	description
0	06/14/15	DLB	RPL	ISSUED FOR BID



BURNS & MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date SEPTEMBER 30, 2014	detailed R. GUIN
designed R. LANG	checked

The City of Fort Smith
LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANT

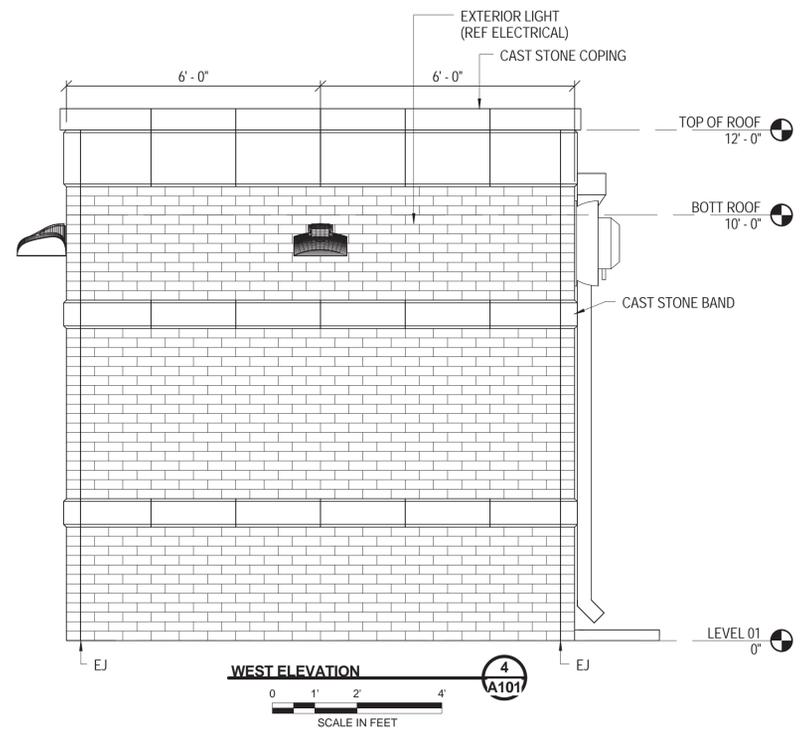
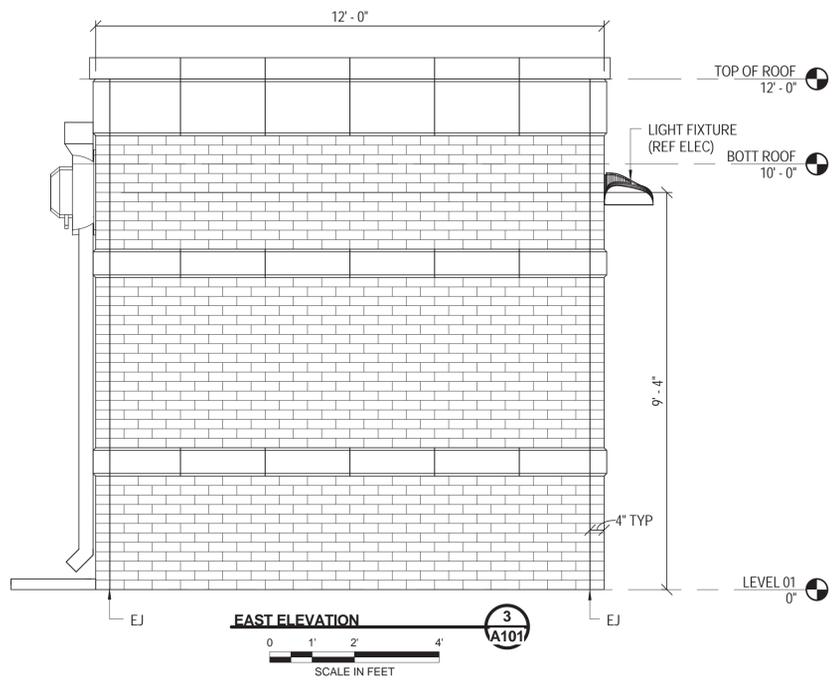
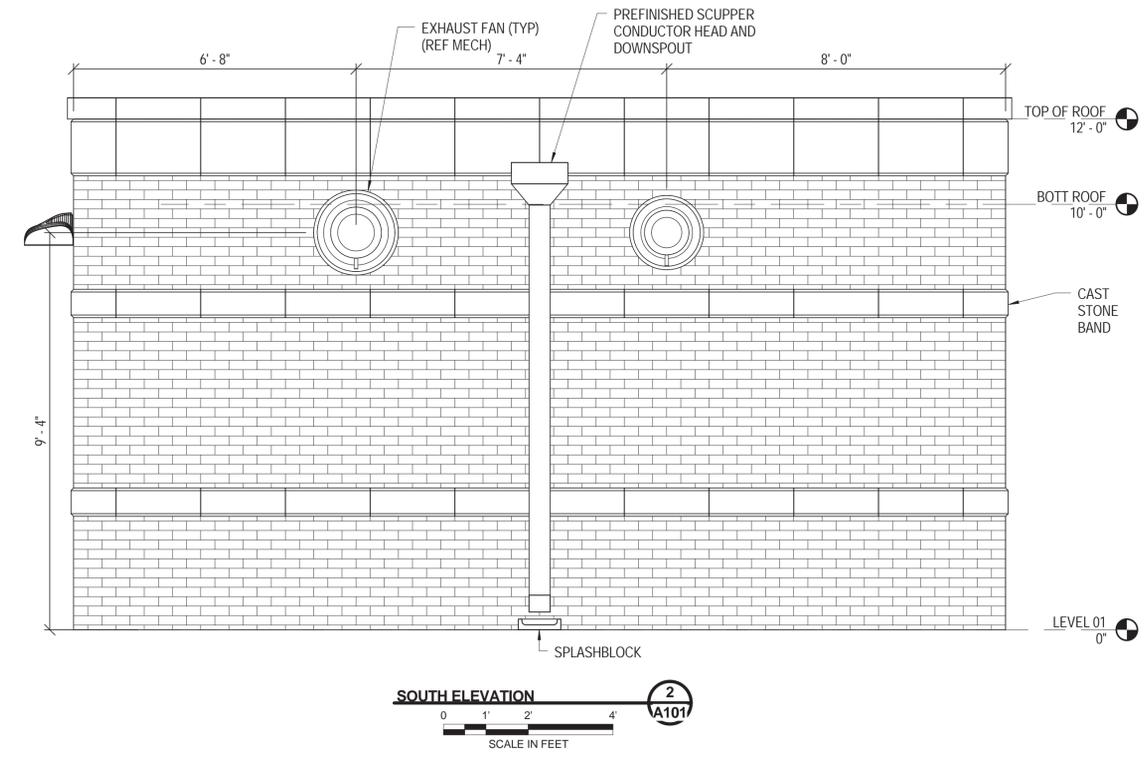
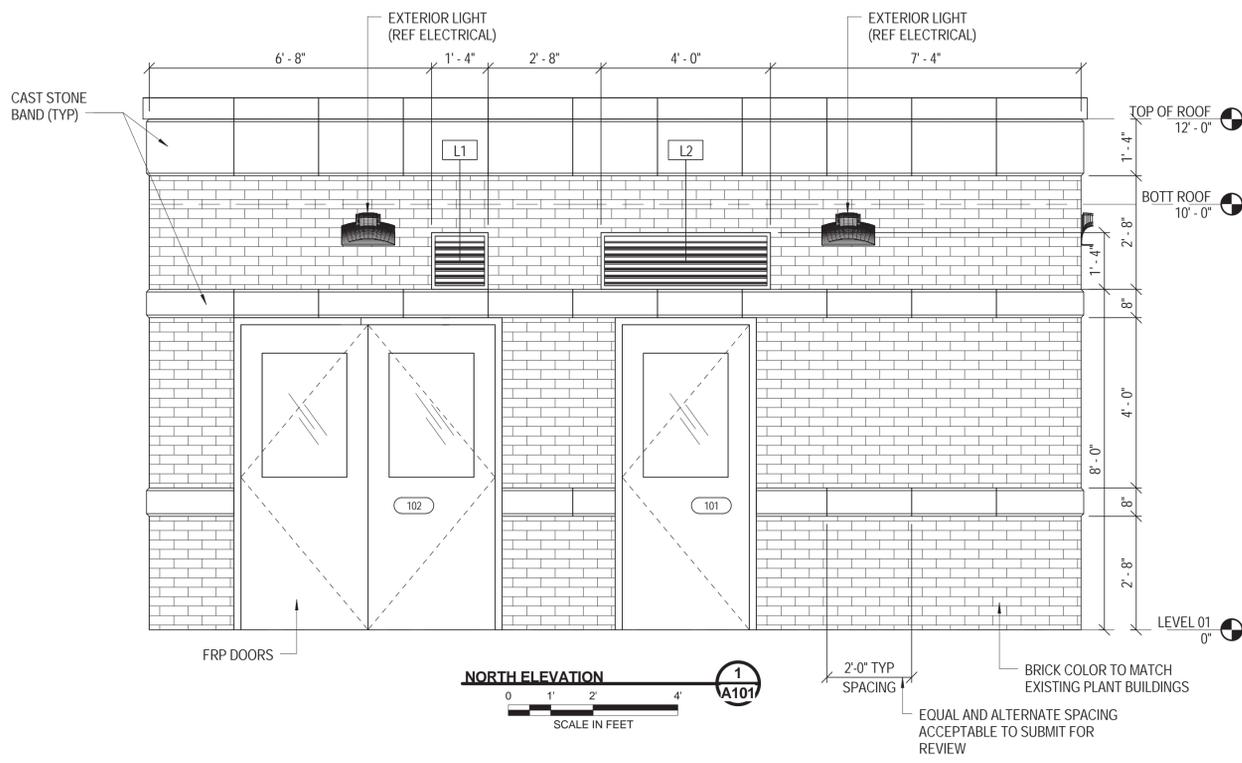
FLUORIDE FEED SYSTEMS
LAKE FORT SMITH
PLANS AND SECTIONS

project 81174	contract
drawing A101	rev. 0
sheet	of sheets
file 81174_ARCH_BASE.RVT	



This document has been digitally signed.
Jun 10 2015

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.



Millimeters
 Scale For Microfilming
 Inches

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	RPL	ISSUED FOR BID



BURNS & MCDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	OCTOBER 2, 2014	detailed	R. GUIN
designed	R. LANG	checked	

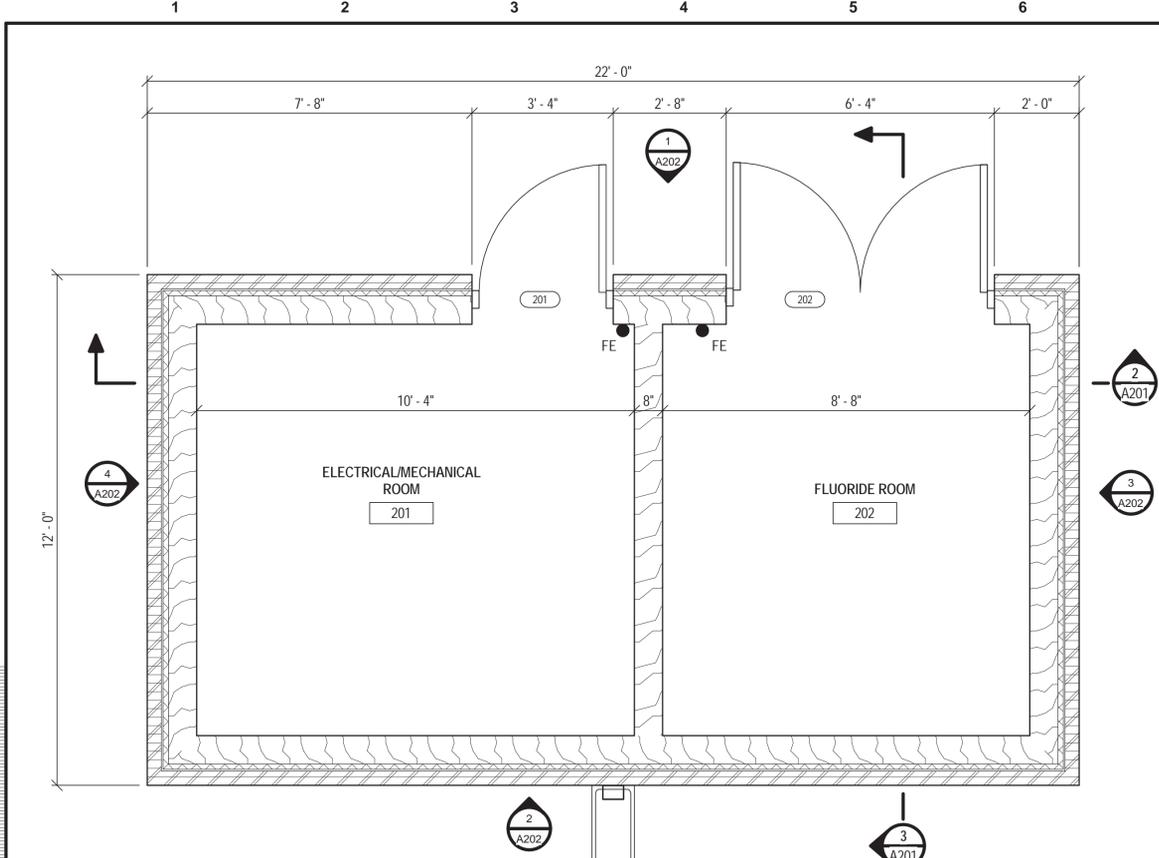


FLUORIDE FEED SYSTEMS
 LAKE FORT SMITH BUILDING ELEVATIONS

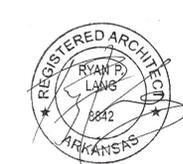
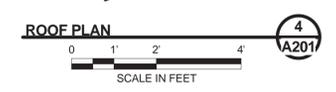
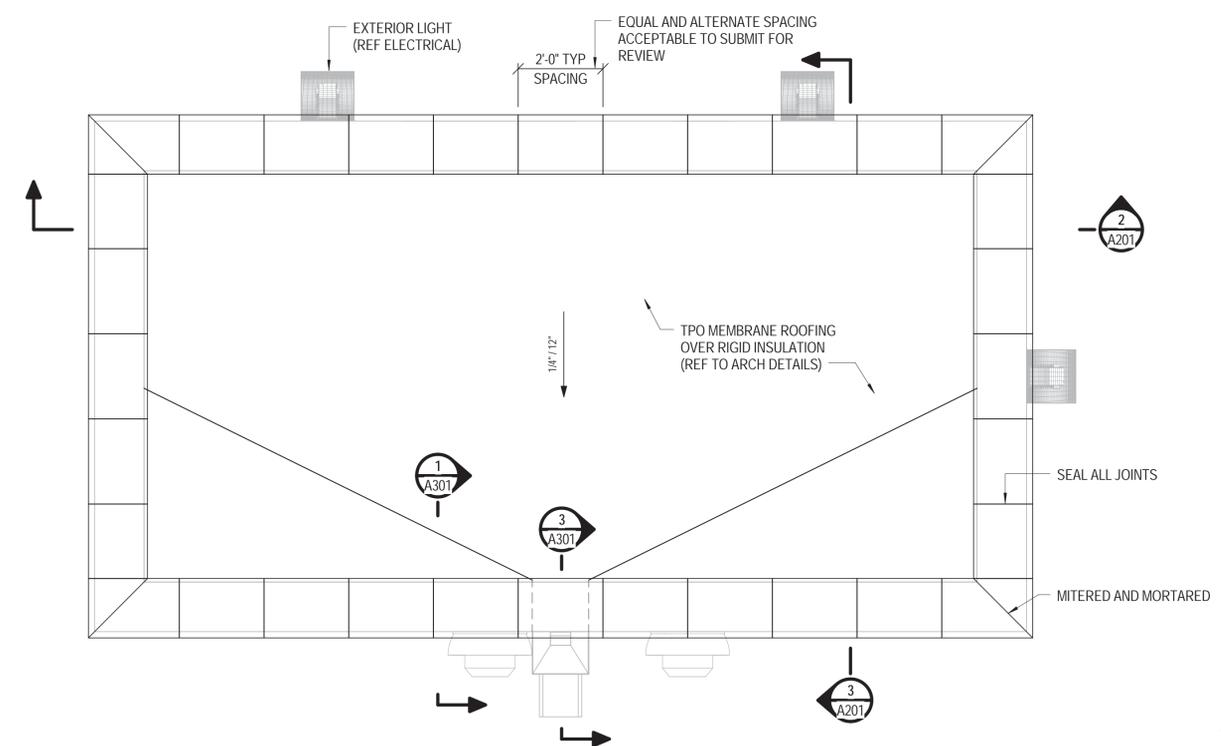
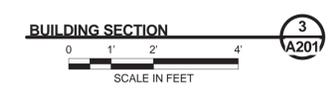
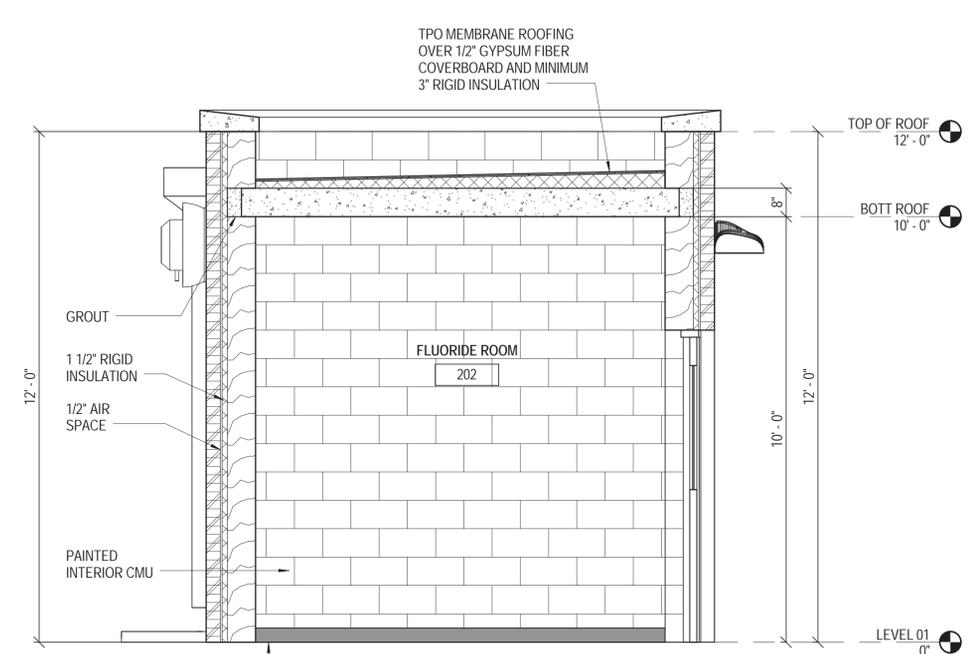
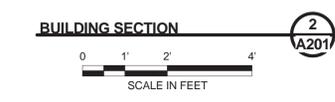
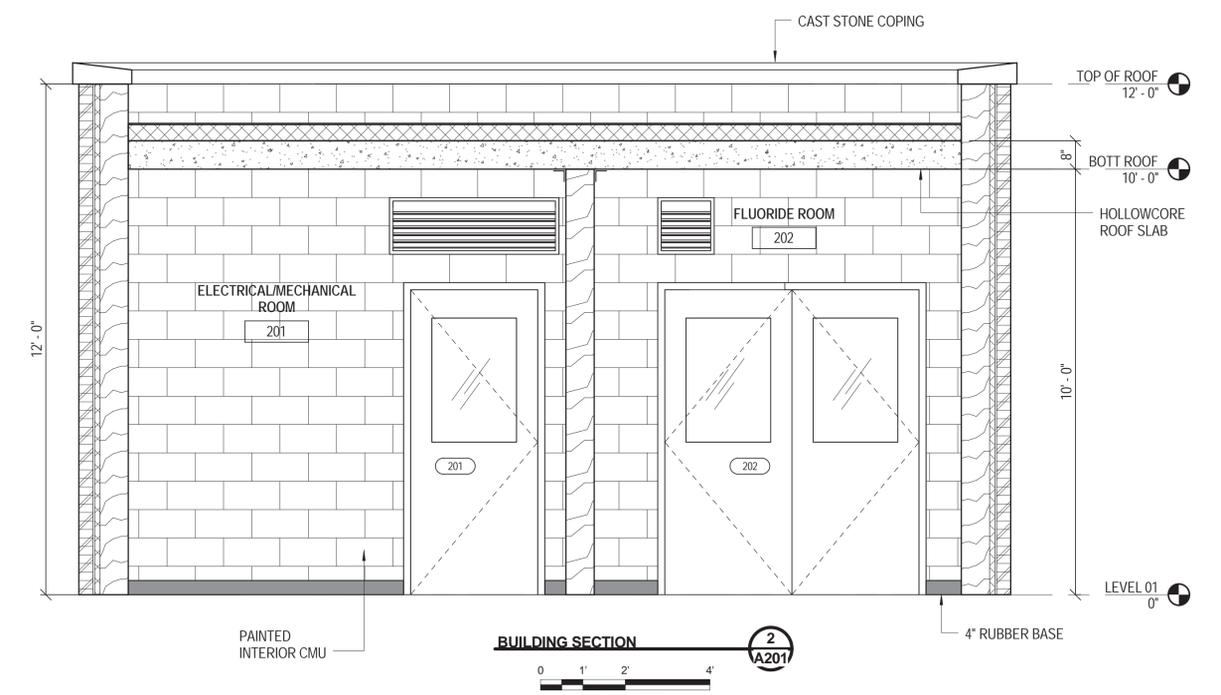
project	81174	contract	
drawing	A102	rev.	0
sheet	of	sheets	
file	81174_ARCH_BASE.RVT		



This document has been digitally signed.
 Jun 10 2015



GENERAL NOTES:
1. COAT WALLS AND FLOORS IN BOTH ROOMS.



no.	date	by	ckd	description
0	06/14/15	DLB	RPL	ISSUED FOR BID



BURNS & MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date SEPTEMBER 30, 2014	detailed R. GUIN
designed R. LANG	checked

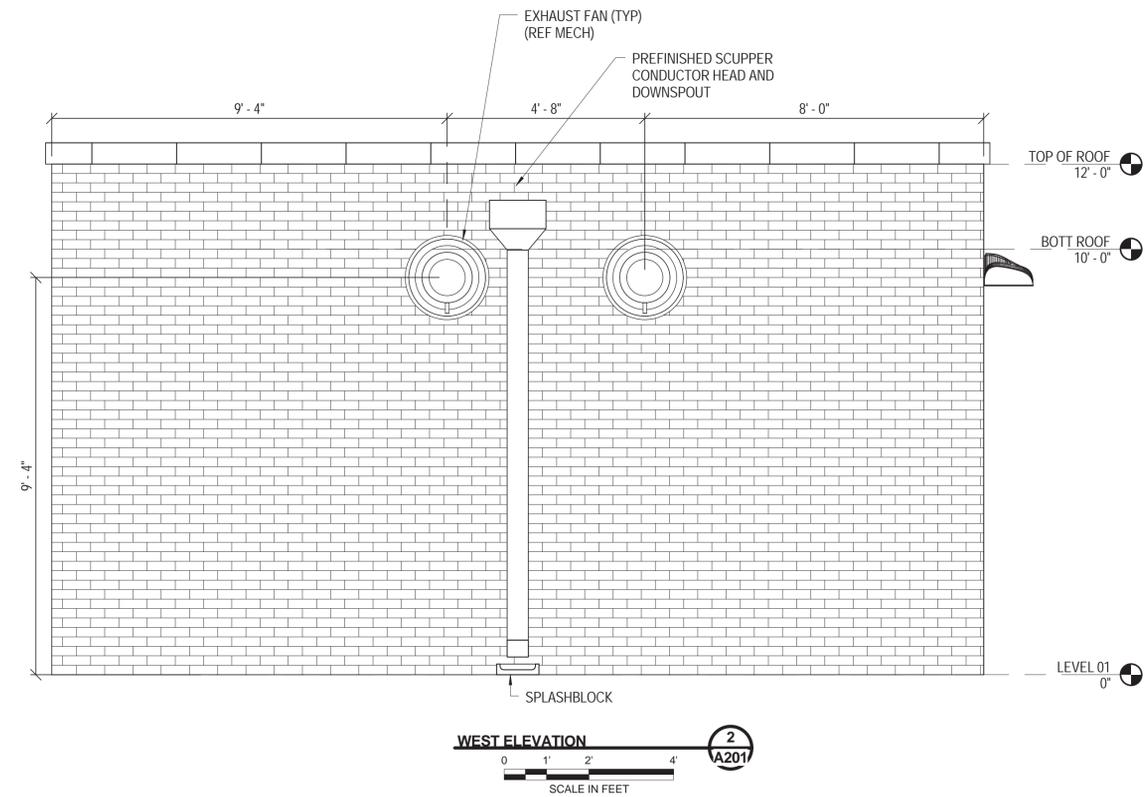
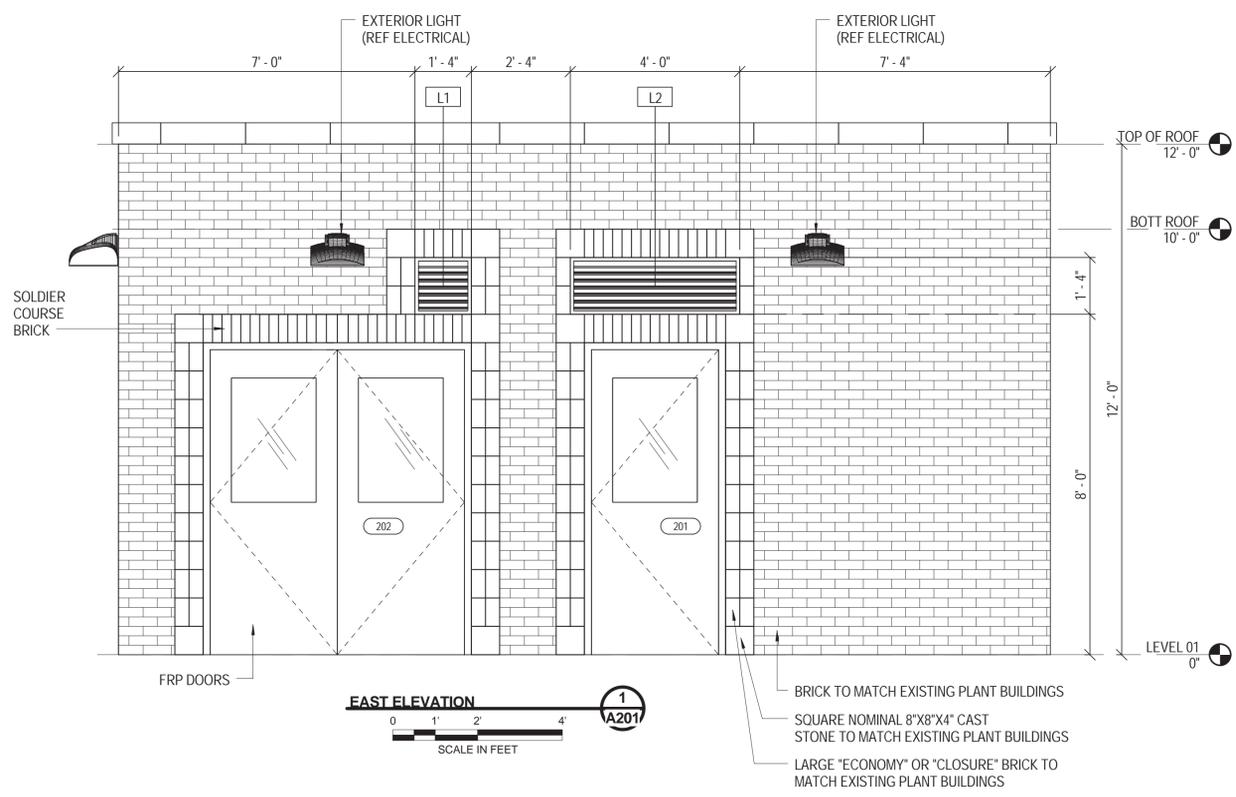
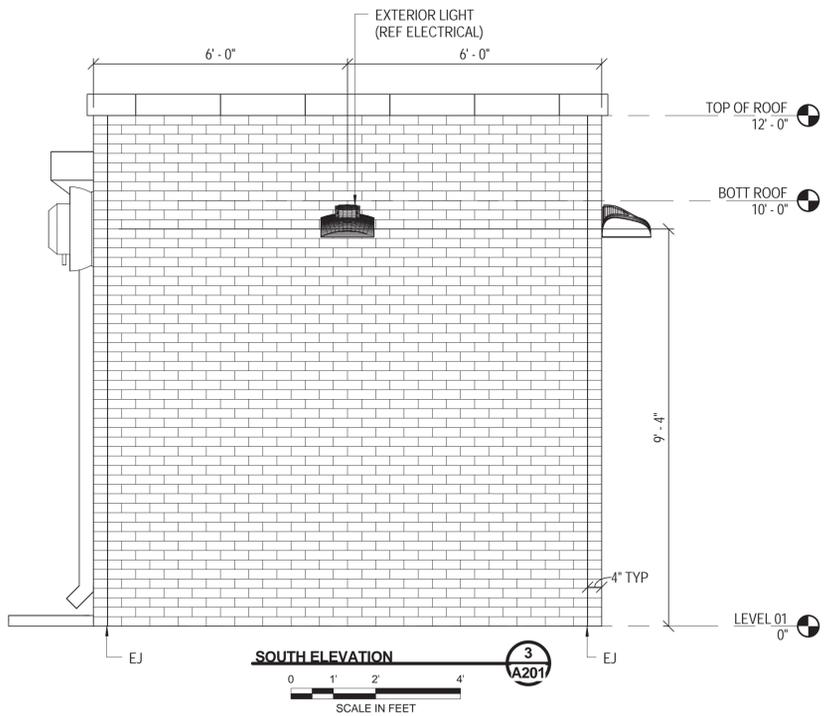
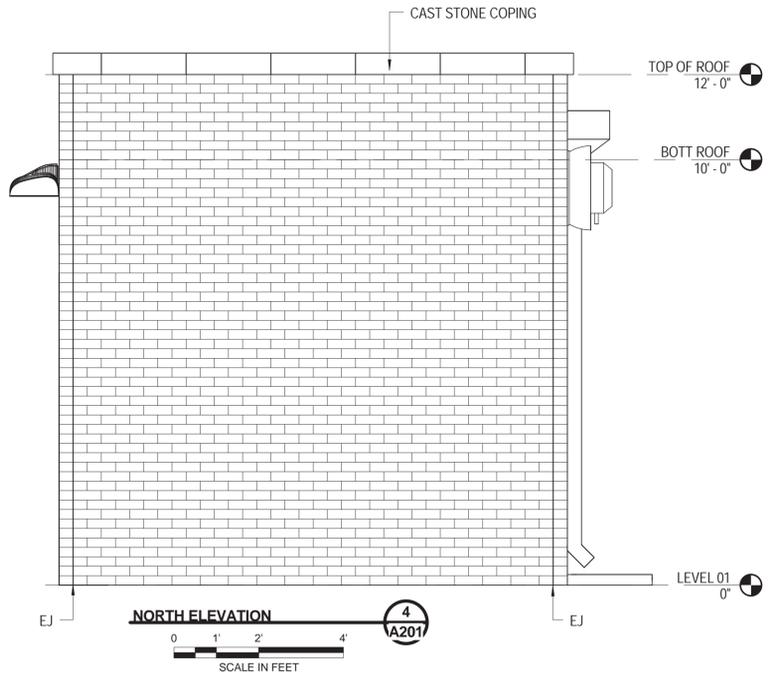
The City of Fort Smith
LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANT

FLUORIDE FEED SYSTEMS
LEE CREEK
PLANS AND SECTIONS

project 81174	contract
drawing A201	rev. 0
sheet	of sheets
file 81174_ARCH_BASE.RVT	

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

This document has been digitally signed.
Jun 10 2015



no.	date	by	ckd	description
0	06/14/15	DLB	RPL	ISSUED FOR BID

A
B
C
D
E
F
G
H
I
J



BURNS & McDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	OCTOBER 2, 2014	detailed	R. GUIN
designed	R. LANG	checked	



LEE CREEK & LAKE FORT SMITH
 WATER TREATMENT PLANT

FLUORIDE FEED SYSTEMS
 LEE CREEK
 BUILDING ELEVATIONS

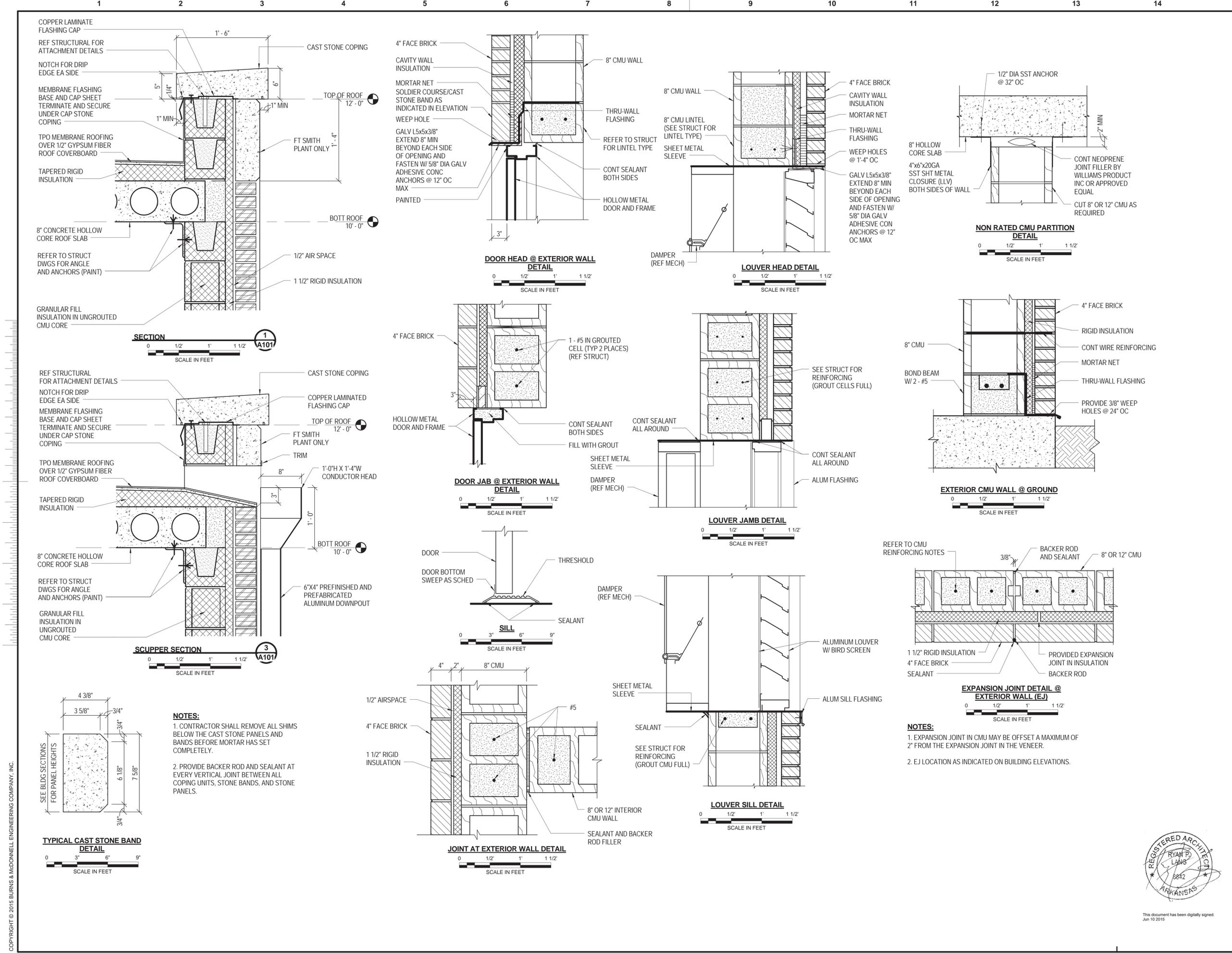
project	81174	contract	
drawing	A202	rev.	0
sheet	of	sheets	
file	81174_ARCH_BASE.RVT		



This document has been digitally signed.
 Jun 10 2015

COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.

Scale For Microfilming
Inches
Scale For Microfilming
Inches
Scale For Microfilming
Inches



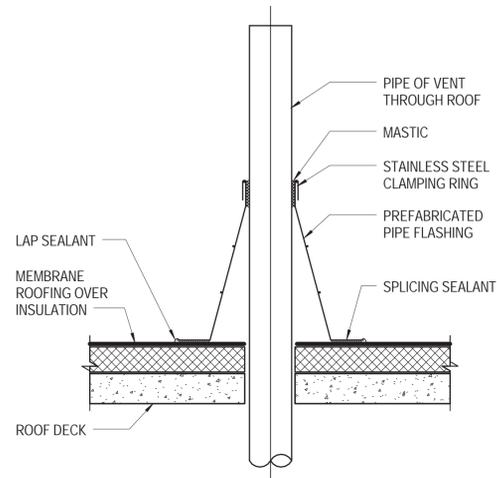
NOTES:
 1. CONTRACTOR SHALL REMOVE ALL SHIMS BELOW THE CAST STONE PANELS AND BANDS BEFORE MORTAR HAS SET COMPLETELY.
 2. PROVIDE BACKER ROD AND SEALANT AT EVERY VERTICAL JOINT BETWEEN ALL COPING UNITS, STONE BANDS, AND STONE PANELS.

no.	date	by	ckd	description
0	06/14/15	DLB	RPL	ISSUED FOR BID

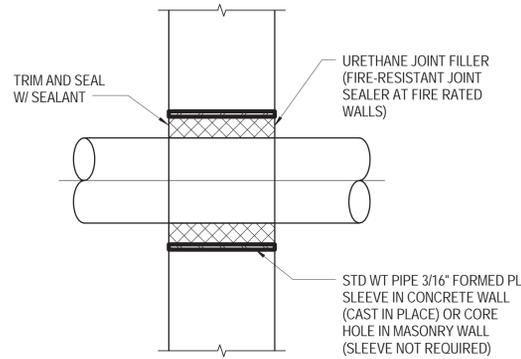
BURNS & MCDONNELL 9400 WARD PARKWAY KANSAS CITY, MO 64114 816-333-9400 LICENSEE NO. 17		
date	OCTOBER 3, 2014 designed R. LANG	detailed R. GUIN checked
 LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANT		
FLUORIDE FEED SYSTEMS SECTIONS AND DETAILS		
project	81174	contract
drawing	A301	rev. 0
sheet	of	sheets
file	81174_ARCH_BASE.RVT	



This document has been digitally signed.
Jun 10 2015



**TYPICAL VENT PIPE FLASHING
DETAIL @ ROOF**

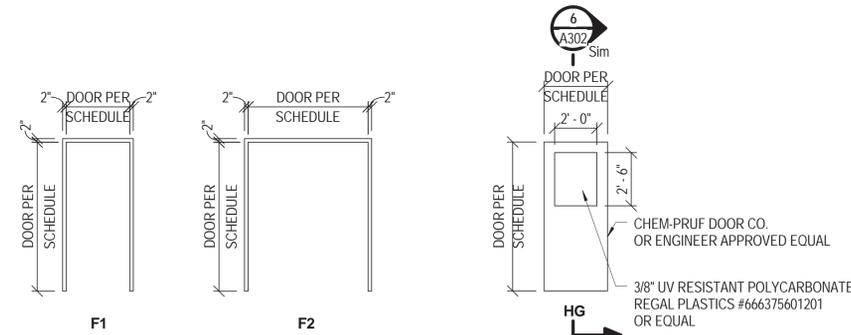


PIPE THROUGH MASONRY WALL



DOOR SCHEDULE									
DOOR NUMBER	DOOR PAIR	DOOR				FRAME		HARDWARE SET	REMARKS
		WIDTH	HEIGHT	TYPE	MATERIAL	TYPE	MATERIAL		
101	-	3'-0"	7'-2"	HG	FRP	F1	FRP	1	
102	PR	3'-0"	7'-2"	HG	FRP	F2	FRP	2	
201	-	3'-0"	7'-2"	HG	FRP	F1	FRP	1	
202	PR	3'-0"	7'-2"	HG	FRP	F2	FRP	2	

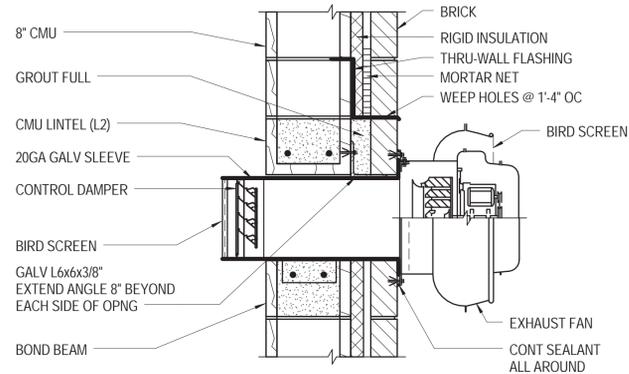
LOUVER SCHEDULE							
QUANTITY	TYPE	SIZE		HEAD HEIGHT	SILL HEIGHT	MATERIAL	REMARKS
		WIDTH	HEIGHT				
2	L1	1'-4"	1'-4"	9'-4"	8'-0"	POWDER COATED ALUM	
2	L2	4'-0"	1'-4"	9'-4"	8'-0"	POWDER COATED ALUM	



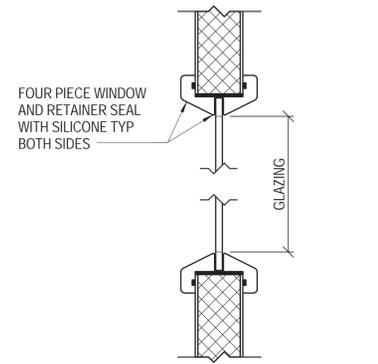
DOOR FRAME TYPES

DOOR TYPES

NOTE:
1. POLYCARBONATE SHALL BE CHEMICAL RESISTANT.



EXHAUST FAN DETAIL



VISION GLASS SECTION



no.	date	by	ckd	description
0	06/14/15	DLB	RPL	ISSUED FOR BID

A
B
C
D
E
F
G
H
I
J



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date DECEMBER 12, 2014	detailed R. GUIN
designed R. LANG	checked

The City of Fort Smith
**LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANT**

**FLUORIDE FEED SYSTEMS
SECTIONS AND DETAILS**

project 81174	contract
drawing A302 - 0	rev.
sheet of	sheets
file 81174_ARCH_BASE.RVT	



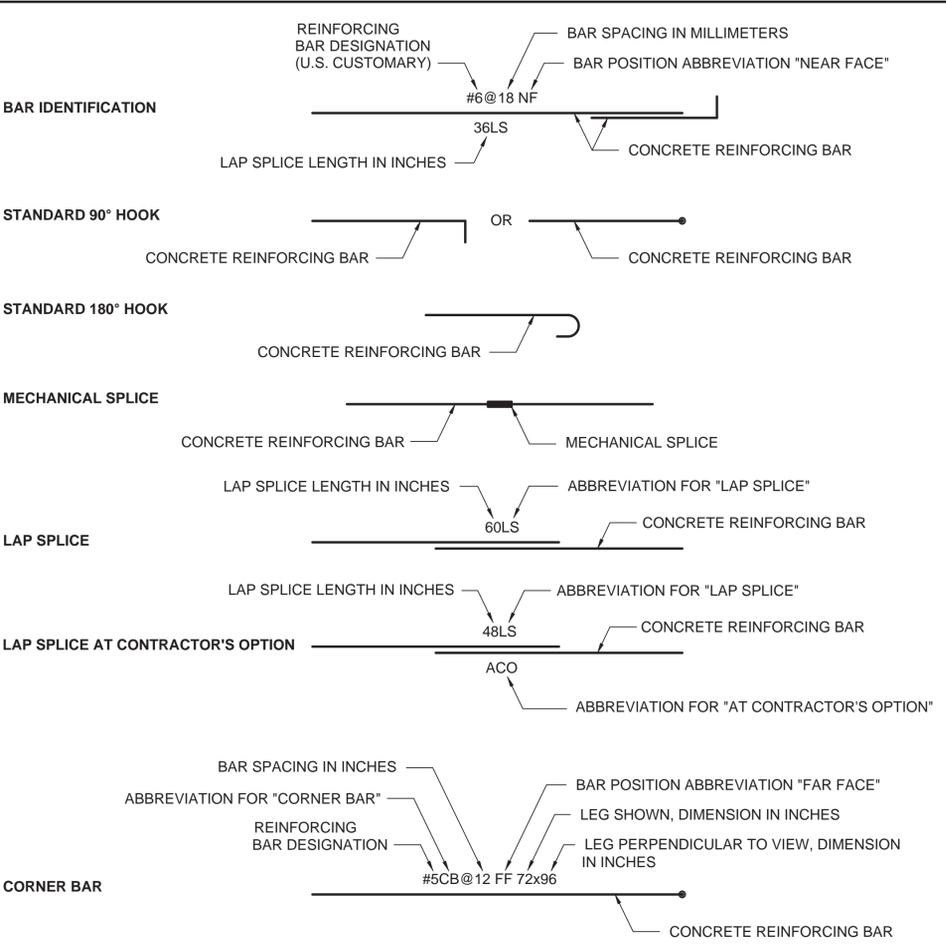
This document has been digitally signed.
Jun 10 2015

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

ABBREVIATIONS

AA	ALUMINUM ASSOCIATION	EA	EACH	LS	LAP SPLICE	STIR	STIRRUP
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	ED	EQUIPMENT DRAIN	M	METER	STL	STEEL
AB	ANCHOR BOLT	EF	EACH FACE	MATL	MATERIAL	STR	STRAIGHT, STAIR
ABT	ABOUT	EJ	EXPANSION JOINT	MAX	MAXIMUM	STRUC	STRUCTURAL
ACI	AMERICAN CONCRETE INSTITUTE	EL	ELEVATION	MECH	MECHANICAL	SW	SOUTHWEST
ACO	AT CONTRACTOR'S OPTION	ELEC	ELECTRICAL	MEZZ	MEZZANINE	SYMM	SYMMETRICAL
ADH	ADHESIVE	EMBED	EMBEDMENT	MFR	MANUFACTURE(R)	T	TON, TREAD, THICKNESS, TOP
AGGR	AGGREGATE	EP	EQUIPMENT PAD	MH	MANHOLE	TEMP	TEMPERATURE, TEMPORARY
AHR	ANCHOR	ERCPC	ELLIPTICAL REINF CONC PIPE	MIN	MINIMUM	THK	THICK
AHU	AIR HANDLING UNIT	EQ	EQUAL	MISC	MISCELLANEOUS	THD	THREAD
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	EQ SP	EQUALLY SPACED	MJ	MECHANICAL JOINT	THRU	THROUGH
AISI	AMERICAN IRON AND STEEL INSTITUTE	EQUIP	EQUIPMENT	MM	MILLIMETER	T&B	TOP AND BOTTOM
AL, ALUM	ALUMINUM	EQUIV	EQUIVALENT	MPa	MEGAPASCAL	TOB	TOP OF BOLT
ALTN	ALTERNATE	EXP	EXPANSION	MS	MECHANICAL SPLICE	TOC	TOP OF CONCRETE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	EXIST	EXISTING	N	NORTH	TOF	TOP OF FLOOR
APPROX	APPROXIMATE	EXT	EXTERIOR	NA	NOT APPLICABLE	TOG	TOP OF GRATING
ARCH	ARCHITECTURAL	FAB	FABRICATE	NE	NORTHEAST	TOS	TOP OF STEEL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	fc	SPECIFIED 28 DAY COMPRESSIVE STRENGTH OF CONCRETE	NF	NEAR FACE	TOW	TOP OF WALL
AWS	AMERICAN WELDING SOCIETY	FD	FLOOR DRAIN	NIC	NOT IN CONTRACT	TSF	TONS PER SQUARE FOOT
B, BOT	BOTTOM	FDN	FOUNDATION	NO	NUMBER	TRD	TREAD
BC	BOLT CIRCLE	FF	FAR FACE	NOM	NOMINAL	TYP	TYPICAL
BETW	BETWEEN	FL	FLOOR	NS	NEAR SIDE	UON	UNLESS OTHERWISE NOTED
BLDG	BUILDING	FLG	FLANGE	NTS	NOT TO SCALE	UNO	UNLESS NOTED OTHERWISE
BM	BEAM	fm	SPECIFIED COMPRESSIVE STRENGTH OF MASONRY	NW	NORTHWEST	VAR	VARIES
BO	BOTTOM OF	FNSH	FINISH	OC	ON CENTER	VERT	VERTICAL
BOS	BOTTOM OF STEEL	FRP	FIBERGLASS REINFORCED PLASTIC	OD	OUTSIDE DIAMETER	W	WEST, WIDE
BRG	BEARING	fs	PERMISSIBLE STEEL STRESS	OF	OUTER FACE	WD	WIDTH
BRKT	BRACKET	FS	FAR SIDE	OPNG	OPENING	WP	WORK POINT
CAP	CAPACITY	FT	FEET, FOOT	OPP	OPPOSITE	WS	WATERSTOP
CB	CORNER BAR	FUT	FUTURE	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION	WT	WEIGHT, WATERTIGHT
CC	CLEAR COVER	Fy, fy	YIELD STRESS	OZ	OUNCE	WW	WASTEWATER
C/C	CENTER TO CENTER	GA	GAGE, GAUGE	Pa	PASCAL	WWF	WELDED WIRE FABRIC
CE	CONCRETE EDGE	GAL	GALLON	PCA	PORTLAND CEMENT ASSOCIATION	W/	WITH
CF	CUBIC FEET	GALV	GALVANIZED	PCF	POUNDS PER CUBIC FOOT	W/O	WITHOUT
CHKR	CHECKERED	GF	GRANULAR FILL	PCI	PRESTRESSED CONCRETE INSTITUTE, POUNDS PER CUBIC INCH	YD	YARD
CIR	CIRCLE	GND	GROUND	PE	PEDESTAL	&	AND
CIRC	CIRCULAR	GR	GRADE	PERP	PERPENDICULAR	±	APPROXIMATELY
CIRCUM	CIRCUMFERENTIAL	GRTG	GRATING	PJTN	PROJECTION	@	AT
CIS	CENTERED IN SLAB	GS	GRATING SUPPORT	PL	PLATE, PROPERTY LINE	x	BY
CIW	CENTERED IN WALL	H	HIGH	PLCS	PLACES	°	DEGREE (PLANE ANGLE)
CL	CENTER LINE	HC	HOLLOW CORE	PLF	POUNDS PER LINEAR FOOT	Ø	DIAMETER
CLJ	CONTROL JOINT	HEX	HEXAGON	PLF	POUNDS PER LINEAR FOOT	=	EQUAL
CLR	CLEAR	HK	HOOK	PSF	POUNDS PER SQUARE FOOT	>	GREATER THAN
CM	CENTIMETER	HR	HANDRAIL	PSI	POUNDS PER SQUARE INCH	<	LESS THAN
CMU	CONCRETE MASONRY UNIT	HORIZ	HORIZONTAL	PRV	PRESSURE RELIEF VALVE	#	NUMBER, POUND
CO	CONCRETE OPENING	HP	HORSEPOWER	PT	POINT	%	PERCENT
COL	COLUMN	HPT	HIGH POINT	PVC	POLYVINYL CHLORIDE		
CONC	CONCRETE	HS	HIGH STRENGTH	PWS	PLASTIC WATERSTOP		
CONN	CONNECTION	HVAC	HEATING, VENTILATION, AND AIR CONDITIONING	R	RISERS		
CONSTR	CONSTRUCTION	IBC	INTERNATIONAL BUILDING CODE	RAD	RADIUS		
CONT	CONTINUOUS	ID	INSIDE DIAMETER	RD	ROOF DRAIN		
CONTR	CONTRACT	IF	INNER FACE	REF	REFERENCE		
COORD	COORDINATE	IJ	ISOLATION JOINT	REINF	REINFORCEMENT		
COR	CORNER	INTR	INTERIOR	REQD	REQUIRED		
CRSI	CONCRETE REINFORCING STEEL INSTITUTE	INVT	INVERT	REV	REVISION		
CTR	CENTER	JT	JOINT	RJ	ROUGHENED JOINT		
CWB	CAPILLARY WATER BARRIER	K	KIP (1000 POUNDS)	RM	ROOM		
CY	CUBIC YARD	KB	KNEE BRACE	S	SOUTH		
db	BAR DIAMETER	KPL	KICK PLATE	SCHED	SCHEDULE		
DBL	DOUBLE	kg	KILOGRAM	SD	SUBDRAIN		
DET	DETAIL	kN	KILONEWTON	SE	SOUTHEAST, STEEL EDGE		
DGA	DENSE GRADED AGGREGATE	KSF	KIPS PER SQUARE FOOT	SECT	SECTION		
DIA	DIAMETER	KSI	KIPS PER SQUARE INCH	SHT	SHEET		
DIAG	DIAGONAL	L	ANGLE, LONG	SIM	SIMILAR		
DIM	DIMENSION	LAD	LADDER	SJ	SAWED JOINT		
DK	DECKING	LB	POUND	SLO	SHORT LEG OUTSTANDING		
DL	DEAD LOAD	LG	LENGTH, LONG	SLP	SLOPE		
DN	DOWN	LL	LIVE LOAD	SLV	SLEEVE		
DT	DOUBLE TEE	LLH	LONG LEG HORIZONTAL	SP	SPACE		
DWG	DRAWING	LLV	LONG LEG VERTICAL	SPECS	SPECIFICATION		
DWL	DOWEL	LLO	LONG LEG OUTSTANDING	SQ	SQUARE		
E	EAST	LNTL	LINTEL	SS, SST	STAINLESS STEEL		
		LONG	LONGITUDINAL	ST	SINGLE TEE		
		LPT	LOW POINT	STD	STANDARD		
				STIF	STIFFENER		

CONCRETE REINFORCING BAR NOMENCLATURE



MATERIALS LEGEND

	ALUMINUM		WATER
	CHECKERED PLATE		EXPANSION MATERIAL
	CONCRETE		FASTENERS
	CONCRETE MASONRY UNITS		REINFORCING BARS
	EARTH		STRUCTURAL STEEL (SMALL SCALE)
	GRANULAR FILL		
	GRATING		
	GROUT		
	ROCK		
	STEEL (LARGE SCALE)		

Scale For Micromirring
Millimeters
Inches

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.



BURNS MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	detailed
JANUARY, 2015	A. HOLMES
designed	checked
A. HOLMES	J. TSOULFIAS



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
STRUCTURAL LEGEND

project	contract
81174	
drawing	rev.
S001	0
sheet	of sheets
file 81174_S001.DWG	



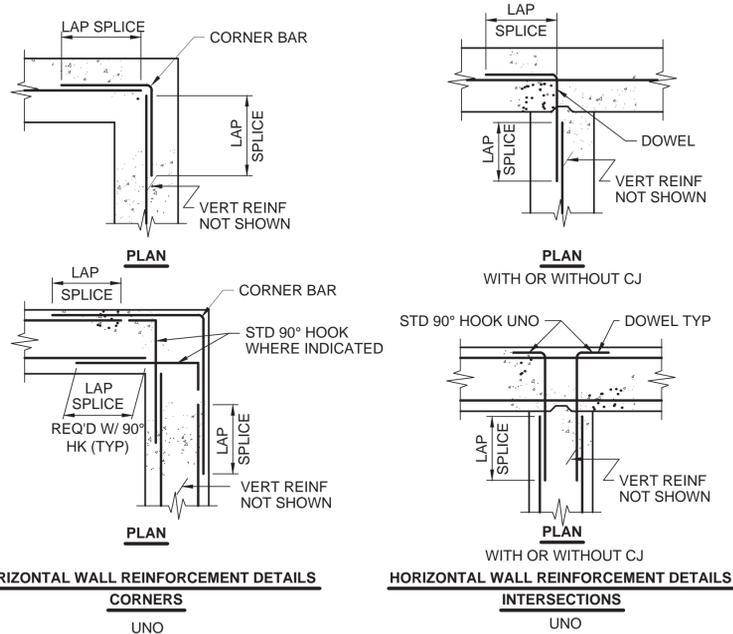
Document has been digitally signed and sealed.
06/10/15

GENERAL NOTES

1. MATERIALS:
 - A. CAST-IN-PLACE CONCRETE: $f_c = 4500$ PSI @ 28 DAYS.
 - B. REINFORCEMENT: $f_y = 60$ KSI.
 - C. MASONRY: SEE DRAWING S005.
 - D. STRUCTURAL STEEL
 1. WIDE FLANGE (WF) SHAPES AND TEES CUT FROM WF: ASTM A992, GRADE 50.
 2. M-SHAPES, S-SHAPES, CHANNELS, AND ANGLES: ASTM A36.
 3. RECTANGULAR AND SQUARE TUBING: ASTM A500, GRADE B.
 4. STRUCTURAL PLATES AND BARS: ASTM A36.
2. DESIGN LOADS PER 2012 INTERNATIONAL BUILDING CODE (IBC 2012) WITH ARKANSAS STATE AMENDMENTS:
 - A. FLOOR LIVE LOAD: REFER TO INDIVIDUAL STRUCTURE.
 - B. ROOF LIVE LOAD: $L = 20$ psf
 - C. ROOF SNOW LOAD:
 1. GROUND SNOW LOAD, $P_g = 10$ psf
 2. FLAT ROOF SNOW LOAD, $P_f = 11$ psf
 3. IMPORTANCE FACTOR, $I = 1.1$
 4. EXPOSURE FACTOR, $C_e = 1.0$
 5. THERMAL FACTOR, $C_t = 1.0$
 - D. WIND LOAD:
 1. ULTIMATE DESIGN WIND SPEED, $V_{ult} = 120$ mph
 2. NOMINAL DESIGN WIND SPEED, $V_{asd} = 93$ mph
 3. RISK CATEGORY III
 4. EXPOSURE CATEGORY: C
 5. INTERNAL PRESSURE COEFFICIENTS: +0.55, -0.55
 - E. EARTHQUAKE DESIGN DATA:
 1. RISK CATEGORY III
 2. SEISMIC IMPORTANCE FACTOR, $I = 1.25$
 3. $S_S = 0.178$ $S_1 = 0.095$
 4. SITE CLASS "D" (STIFF SOIL)
 5. $S_{DS} = 0.190$ $S_{D1} = 0.152$
 6. SEISMIC DESIGN CATEGORY: C
 7. BASIC SEISMIC-FORCE-RESISTING SYSTEM. ORDINARY REINFORCED MASONRY SHEAR WALLS.
 8. EQUIVALENT LATERAL FORCE PROCEDURE
 - F. SPECIAL LOADS:
 1. ROOF ELEC/MECH LOAD - REFER TO INDIVIDUAL STRUCTURE.
3. SEE CIVIL, ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR MISCELLANEOUS STEEL, CONCRETE, ANCHORS AND OPENINGS NOT INDICATED ON STRUCTURAL DRAWINGS.
4. STANDARD DETAILS ARE ON DWGS S002, S003, S004, UNO.
5. ALLOWABLE SOIL BEARING PRESSURE: 1500 PSF.

PRECAST/PRESTRESSED CONCRETE NOTES:

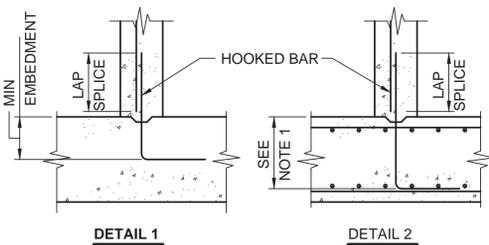
1. DESIGN LOADS:
 - A. SUPERIMPOSED DEAD LOADS = REFER TO INDIVIDUAL STRUCTURE.
 - B. SUPERIMPOSED LIVE LOADS = REFER TO INDIVIDUAL STRUCTURE.
 - C. LIMIT TOTAL DEFLECTION TO L/240 FOR IMMEDIATE DEFLECTION DUE TO LIVE LOAD PLUS LONG TERM DEFLECTION DUE TO SUSTAINED LOADS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE PRECAST CONCRETE MANUFACTURER THE LOCATION AND MAGNITUDE OF ALL LOADS RESULTING FROM THE ATTACHMENT OF MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT TO THE HOLLOW CORE PANELS. THE PRECAST CONCRETE MANUFACTURER SHALL PROVIDE CONTRACTOR WITH CONNECTION DETAILS TO MOUNT THE EQUIPMENT TO THE HOLLOW CORE PANELS.
3. PRECAST CONCRETE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL ASPECTS RELATED TO THE PRECAST CONNECTIONS, INCLUDING THOSE REQUIRED FOR THE ATTACHMENT OF MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT. CONNECTION DETAILS, QUANTITY, AND SPACING SHOWN ON STRUCTURAL DWGS ARE MINIMUM REQUIREMENTS ONLY.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE PRECAST CONCRETE MANUFACTURER ALL OPENING DIMENSIONS NOT INDICATED. SEE ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN.
5. NO HAND OR EXPLOSIVE-DRIVEN INSERTS, PINS, ANCHORS, OR DRIVE-INS OF ANY KIND SHALL BE USED FOR ATTACHMENT OF PIPING, CONDUITS, HANGERS, ETC., TO THE PRECAST CONCRETE MEMBERS UNLESS OTHERWISE INDICATED. ALL FIELD CUT OR DRILLED OPENINGS SHALL BE APPROVED BY THE PRECAST CONCRETE MANUFACTURER AS TO SIZE AND LOCATION PRIOR TO CUTTING AND DRILLING.
6. REFER TO DWG S005 FOR MASONRY DETAILS.
7. ANCHORS USED FOR HOLLOW CORE CONNECTIONS TO MASONRY SHALL BE HILTI HIT-HY70 ADHESIVE ANCHOR WITH 5/8" DIA HAS SS (304 SST) RODS EMBEDDED 5 5/8".



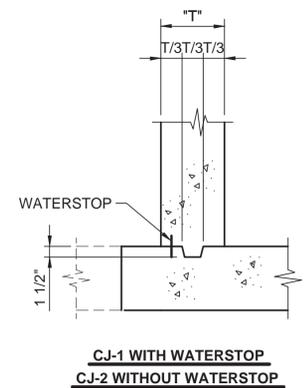
CONCRETE REINFORCING BAR LAP SPLICES AND TENSION DEVELOPMENT LENGTHS IN INCHES						
BAR SIZE	1 1/2" CC		2" CC		3" CC	
	TOP	OTHER	TOP	OTHER	TOP	OTHER
3	16	16	16	16	16	16
4	20	16	20	16	20	16
5	25	19	25	19	25	19
6	29	23	29	23	29	23
7	48	37	43	33	43	33
8	61	47	49	37	49	37
9	75	58	60	46	55	42
10	91	70	74	57	62	47

CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH..... 3"
 CONCRETE EXPOSED TO EARTH, WEATHER & WASTEWATER:
 #6 THRU # 18 BARS..... 2"
 #5 BAR, W31 OR D31 WIRE & SMALLER..... 1 1/2"
 CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND :
 SLABS, WALLS & JOISTS :
 #14 & #18 BARS 1 1/2"
 #11 & SMALLER..... 3/4"
 BEAMS AND COLUMNS :
 PRIMARY REINF. TIES, STIRRUPS & SPIRALS 1 1/2"

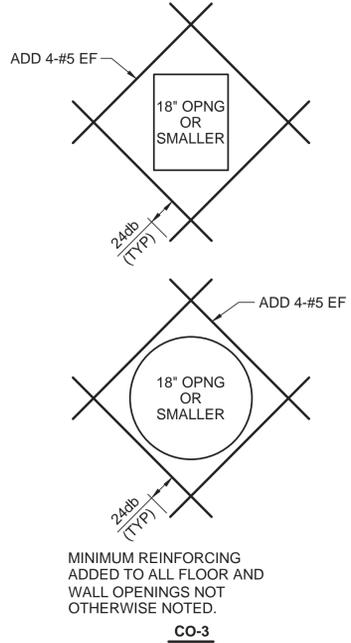
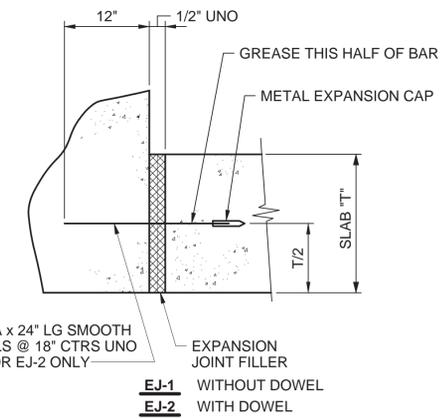
CONCRETE CLEAR COVER PROTECTION FOR REINF (NON-PRESTRESSED, CAST IN PLACE) UNLESS NOTED OTHERWISE



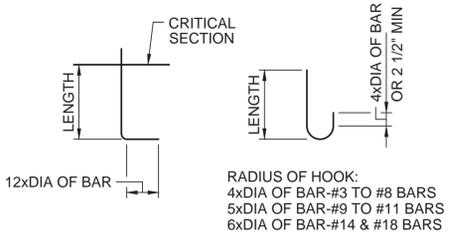
- DEVELOPMENT LENGTH NOTES:**
1. WHERE DWGS ARE DETAILED SIMILAR TO DETAIL 2, EXTEND THE EMBEDMENT LENGTH SUCH THAT THE HOOKED BAR CONTACTS THE LAYER OF MAIN REINFORCING SHOWN.
 2. EMBEDMENT LENGTHS IN CHART ARE TYPICAL EXCEPT AS NOTED IN DETAIL 2, OR AS INDICATED ON DRAWINGS.



CJ-1 WITH WATERSTOP
CJ-2 WITHOUT WATERSTOP



CO-3



TYPICAL REINFORCING DEVELOPMENT AND SPLICES

DEVELOPMENT LENGTHS HOOKED BARS ($f_c = 4500$ psi)	
BAR SIZE	LENGTH OR MIN EMBEDMENT
#3	7"
#4	10"
#5	1'-0"
#6	1'-3"
#7	1'-5"
#8	1'-7"
#9	1'-10"
#10	2'-0"
#11	2'-3"

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



BURNS & McDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-332-9400
 LICENSEE NO. 17

date	designed	checked	detailed
JANUARY, 2015	A. HOLMES	J. TSOULIAS	A. HOLMES

The City of Fort Smith
 LEE CREEK & LAKE FORT SMITH
 WATER TREATMENT PLANTS

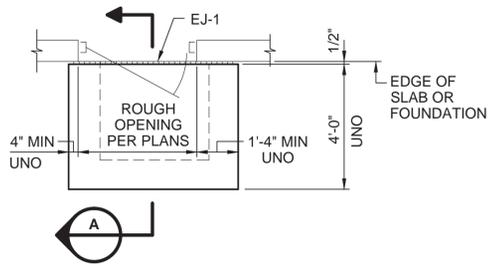
FLUORIDE FEED SYSTEMS
 STRUCTURAL STANDARD DETAILS
 SHEET 1

project	contract
81174	
drawing	rev.
S002	0
sheet	of sheets
file 81174_S002.DWG	

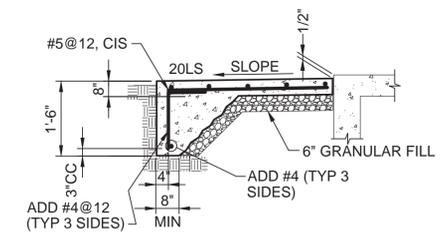


Document has been digitally signed and sealed. 06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



PLAN
TYPICAL DOOR STOOP
NOT TO SCALE



NOTE: SLOPE = 1/4" PER FT. UNO.

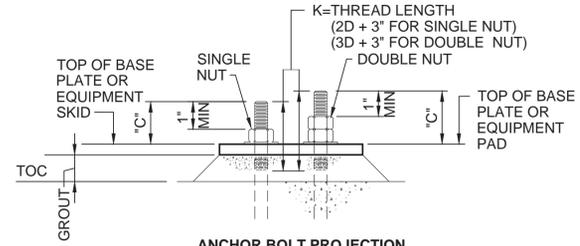
SECTION
NOT TO SCALE

SIZE	EMBEDMENT
3/8"	3 3/8"
1/2"	4 1/2"
5/8"	5 5/8"
3/4"	6 3/4"

SIZE	EMBEDMENT
3/8"	2 1/2"
1/2"	3 1/2"
5/8"	4 1/2"
3/4"	5 1/4"

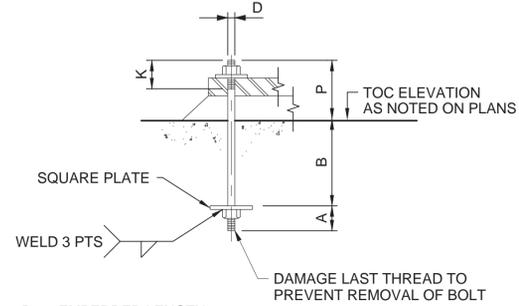
NOTE:
PROVIDE MIN EMBEDMENT AS INDICATED FOR CONCRETE ANCHORS AS SHOWN UNLESS NOTED OR REQUIRED OTHERWISE.

CONCRETE ANCHOR MINIMUM EMBEDMENT



PROJECTION TABLE DIM "C"		
AB DIA	SINGLE NUT	DOUBLE NUTS
5/8"	2 1/4"	2 3/4"
3/4"	2 1/4"	3"
7/8"	2 1/2"	3 1/2"
1"	2 3/4"	3 3/4"
1 1/8"	3"	4"
1 1/4"	3 1/4"	4 1/2"
1 3/8"	3 1/4"	4 3/4"
1 1/2"	3 1/2"	5"
1 3/4"	4"	5 3/4"
2"	4 1/4"	6 1/4"

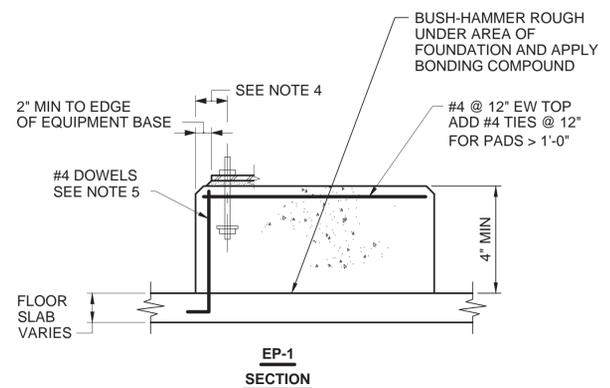
ALL DIMENSIONS IN INCHES



B = EMBEDDED LENGTH
D = BOLT DIAMETER
K = THREADS (2D+3" SINGLE NUT)
THREADS (3D+3" DOUBLE NUTS)
P = BOLT PROJECTION

SCHEDULE				
D	A	B	SQUARE PL	REMARKS
5/8"	2"	8"	PL 1/2x2 1/2" SQ	
3/4"	2"	10"	PL 1/2x3" SQ	
7/8"	3"	1'-0"	PL 5/8x3 1/2" SQ	
1"	3"	1'-2"	PL 5/8x3 1/2" SQ	
1 1/8"	3"	1'-4"	PL 3/4x4" SQ	
1 1/4"	3"	1'-6"	PL 3/4x4 1/2" SQ	
1 3/8"	4"	1'-8"	PL 7/8x5" SQ	
1 1/2"	4"	1'-10"	PL 7/8x5 1/2" SQ	
1 3/4"	4"	2'-0"	PL 1x6" SQ	
2"	4"	2'-2"	PL 1 1/4x7" SQ	

TYPE II ANCHOR BOLT
UNSLEEVED BOLT



EP-1 GENERAL NOTES:

- PROVIDE EP-1 EQUIPMENT PAD FOUNDATION U.N.O.
- PROVIDE ANCHOR BOLTS AND GROUT AS REQUIRED BY EQUIPMENT MANUFACTURER.
- EQUIPMENT PAD FOUNDATIONS SHALL CONFORM TO THIS DETAIL, EQUIPMENT MANUFACTURER'S REQUIREMENTS, AND THE FOLLOWING:
 - REINFORCE PAD TO CONFORM WITH THIS DETAIL. IF THE FLOOR IS CONSTRUCTED BEFORE THE DOWELS ARE PLACED, THE DOWELS SHALL BE INSTALLED USING ADHESIVE ANCHORS INTO THE FLOOR SLAB.
 - EQUIPMENT SHALL BE GROUTED IN PLACE WITH NON-SHRINK GROUT, UNLESS OTHERWISE RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
 - EQUIPMENT ANCHOR BOLTS SHALL BE STANDARD TYPE II A.B., UNLESS OTHERWISE RECOMMENDED BY THE EQUIPMENT MANUFACTURER. IF PAD THICKNESS DOES NOT ALLOW FOR TYPE II A.B. PROPER EMBED PER TABLE THEN ADHESIVE ANCHORS WILL BE PERMITTED.
- DIMENSION SHALL BE 4-INCHES MINIMUM FOR PADS WITH 1" DIAMETER ANCHOR BOLTS AND SMALLER, 6-INCHES FOR PADS WITH ANCHOR BOLTS GREATER THAN 1" IN DIAMETER.
- PROVIDE DOWELS AT 12-INCHES MINIMUM CENTER TO CENTER, OR PROVIDE NUMBER OF DOWELS TO EQUAL TOTAL CROSS SECTIONAL AREA OF ANCHOR BOLTS OF PAD, EQUALLY SPACED AROUND PAD.



BURNS & McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	designed	detailed	checked
JANUARY, 2015	A. HOLMES	A. HOLMES	J. TSOULIAS

The City of Fort Smith, ARKANSAS
LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
STRUCTURAL STANDARD DETAILS
SHEET 2

project	contract
81174	
drawing	rev.
S003	0
sheet	of sheets
file 81174_S003.DWG	



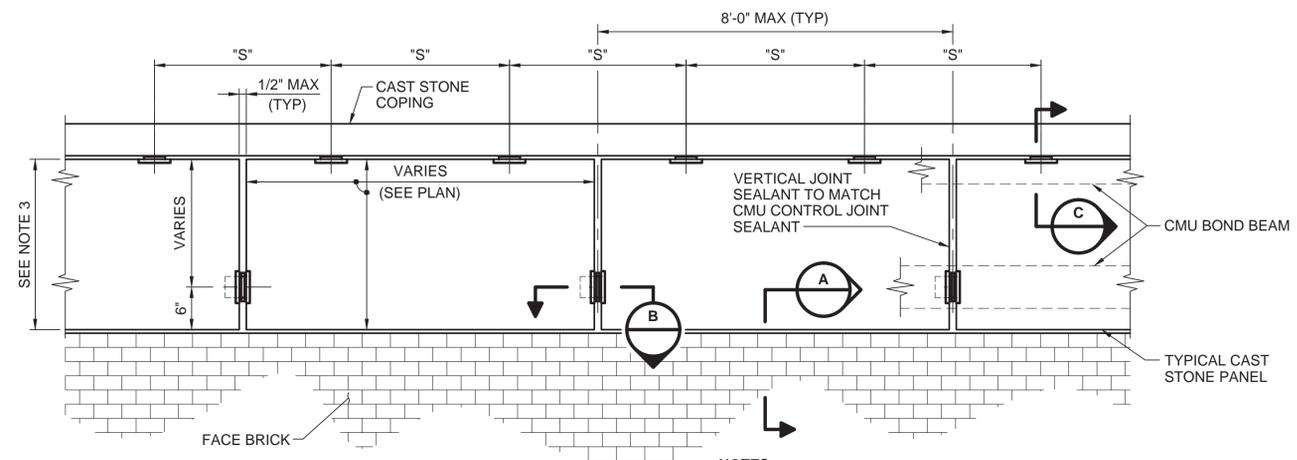
Document has been digitally signed and sealed. 06/10/15

Scale For Microfitting
Millimeters

Inches

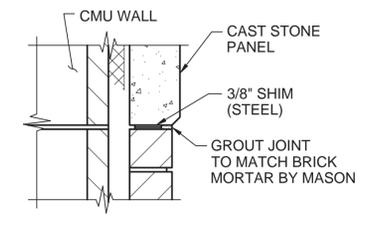
COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

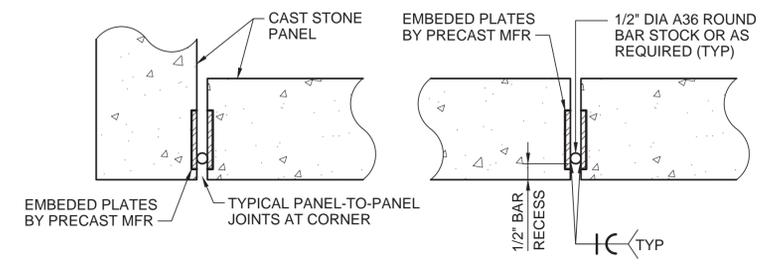


- NOTES:**
1. "S" INDICATES PANEL CONNECTION SPACING. VARIES (MAX 4'-0" OC)
 2. ALL ADHESIVE ANCHORS FOR CONNECTIONS TO CMU SHALL BE MADE WITH HILTI HIT HY-70 EPOXY. ALL ANCHORS SHALL BE INSTALLED IN BOND BEAMS.
 3. SEE ARCHITECTURAL DRAWINGS FOR PANEL HEIGHT.

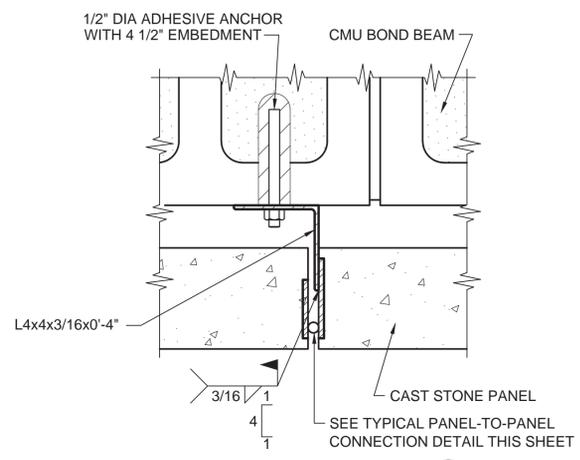
CAST STONE PANEL ELEVATION
NOT TO SCALE



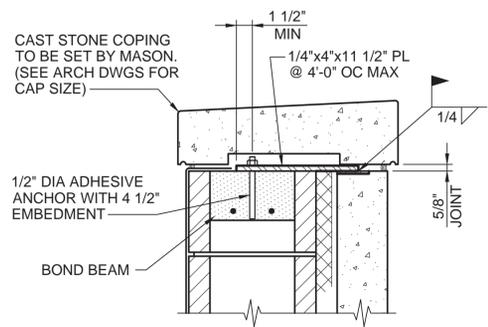
SECTION A
SCALE IN FEET



TYP PANEL-TO-PANEL CONNECTION
SCALE IN INCHES



SECTION B
SCALE IN INCHES



SECTION C
SCALE IN FEET

Millimeters
Scale For Microfitting
Inches



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	A. HOLMES
designed	A. HOLMES	checked	J. TSOUFLIAS



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS

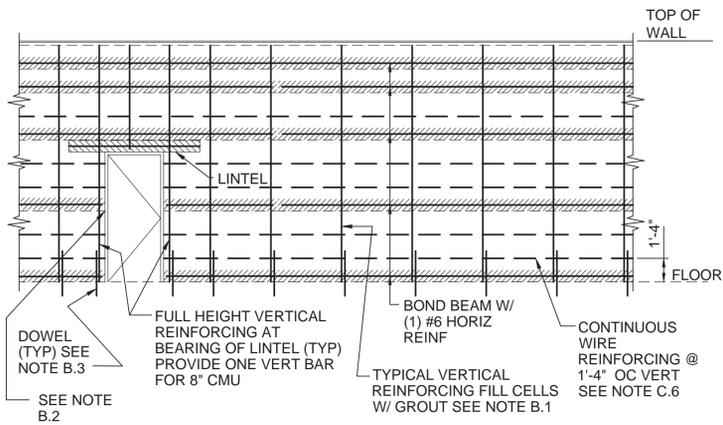
STRUCTURAL STANDARD DETAILS
SHEET 3

project	81174	contract	
drawing	S004	rev.	0

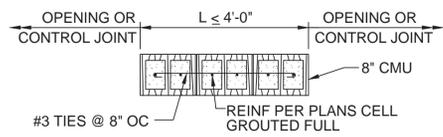
sheet	of	sheets
file	81174_S004.DWG	



Document has been digitally signed and sealed.
06/10/15



TYPICAL CMU WALL ELEVATION



CMU WALL PIER REINFORCING DETAIL
NOT TO SCALE

- NOTES:**
1. REINFORCING SHOWN FOR WALL PIERS BOUNDED BY WINDOW OPENINGS, DOOR OPENINGS, LOUVERS OPENINGS OR CONTROL JOINTS.
 2. LATERAL TIES SHALL BE IN CONTACT WITH VERTICAL BARS AND NOT IN THE HORIZONTAL BED JOINTS. LATERAL TIES SHALL BE PLACED NOT LESS THAN 1 1/2" OR MORE THAN 3" FROM TOP AND BOTTOM OF CMU WALL PIERS.

CONCRETE MASONRY UNIT (CMU) NOTES

A. GENERAL:

1. ENGINEERED MASONRY IS DESIGNED IN ACCORDANCE WITH "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" (ACI 530-11/ ASCE 5-11/TMS 402-11).
2. MATERIALS:
CMU: NORMAL WEIGHT, ASTM C90, TYPE I. MINIMUM COMPRESSIVE STRENGTH = 1900 PSI.
MORTAR: TYPE S, AVERAGE COMPRESSIVE STRENGTH, 1800 PSI.
ASSEMBLY/PRISM MINIMUM COMPRESSIVE STRENGTH: f_m = 1500 PSI.
GROUT: ASTM C476, MINIMUM COMPRESSIVE STRENGTH, 2000 PSI.
REINFORCING STEEL: ASTM A615, GRADE 60.
JOINT REINFORCING: GALVANIZED CARBON STEEL WIRE LADDER TYPE.
3. ALL WALLS SHALL BE RUNNING BOND TYPE CONSTRUCTION.
4. ALL CMU CELLS WITH REINFORCING OR ANCHORS SHALL BE FILLED WITH GROUT.
5. ALL VERTICAL CMU WALL REINFORCING SHALL HAVE FULL CONTACT LAP SPLICES WITH DOWELS FROM FOUNDATION. INSERTING DOWELS INTO FRESH OR PARTIALLY HARDENED CONCRETE OR GROUT IS PROHIBITED.
6. ALL CMU BOND BEAMS SHALL BE KNOCKOUT TYPE.
7. VERTICAL CMU REINFORCEMENT SHALL BE CONTINUOUS THROUGH LINTELS AND SHALL EXTEND THE ENTIRE HEIGHT OF THE WALL.
8. REINFORCE ALL WALL PIERS PER CMU WALL PIER REINFORCING DETAIL THIS DRAWING.
9. REINFORCING LAP SPLICE LENGTHS (UNO) #5 BARS: 3'-9" #6 BARS: 4'-6"

B. VERTICAL REINFORCEMENT:

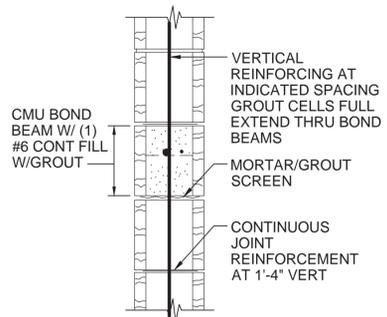
1. PROVIDE 1- #5 VERTICAL CENTERED IN THE WALL AT THE FOLLOWING SPACING: 32" OC.
2. PROVIDE ADDITIONAL VERTICAL REINFORCEMENT AT EACH SIDE OF ALL MASONRY OPENINGS GREATER THAN 10" IN WIDTH AND AT INTERSECTION OF EXTERIOR WALLS. IN OPENINGS WIDER THAN 24" PROVIDE ADDITIONAL VERTICAL REINFORCEMENT IN TWO ADJACENT CELLS ON EACH SIDE OF THE OPENING. ADDED VERTICAL REINFORCEMENT SHALL BE CONTINUOUS FOR THE FULL HEIGHT OF WALL, UNO. SEE ADD BAR DETAIL ON THIS DWG.
3. PROVIDE FOUNDATION DOWEL SAME SIZE AND LOCATION AS VERTICAL BARS IN THE WALL ABOVE. SHALL BE LOCATED AT EACH VERTICAL WALL REINFORCEMENT AND SHALL EXTEND A MINIMUM OF 18" INTO THE CONCRETE FOUNDATION WALL. AT THICKENED SLABS, EXTEND DOWELS TO WITHIN 2" OF THE BOTTOM OF SLAB AND PROVIDE A STANDARD 90° HOOK.
4. EXTEND ALL VERTICAL BARS FROM THE BOTTOM COURSE THROUGH THE TOP MOST BOND BEAM.

C. HORIZONTAL REINFORCEMENT:

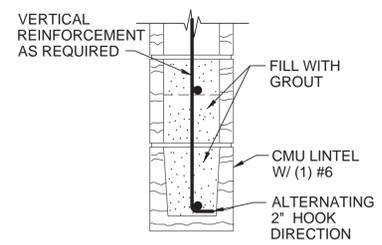
1. CONSTRUCT BOND BEAMS USING 1-#6 HORIZONTAL, UNO.
2. PROVIDE BOND BEAMS AT 4'-0" MAX VERTICAL SPACING WHERE NOT INDICATED ON DRAWING, OR AT OTHER ELEVATIONS AS INDICATED.
3. LOCATE BOND BEAMS AT THE BOTTOM-MOST COURSE AND THE TOP-MOST COURSE.
4. PROVIDE BOND BEAM BELOW ALL MASONRY OPENINGS AND EXTEND A MINIMUM OF 24" BEYOND EACH SIDE OF OPENING.
5. PROVIDE HORIZONTAL JOINT REINFORCEMENT AT EVERY OTHER COURSE OR A MAXIMUM 16" SPACING. BEGIN JOINT REINFORCING AT THE TOP OF SECOND BLOCK COURSE ABOVE FLOOR SLAB.

D. LINTELS:

1. PROVIDE MASONRY LINTELS ABOVE OPENINGS IN MASONRY WALLS AS REQUIRED. SEE DETAILS ON THIS DRAWING.

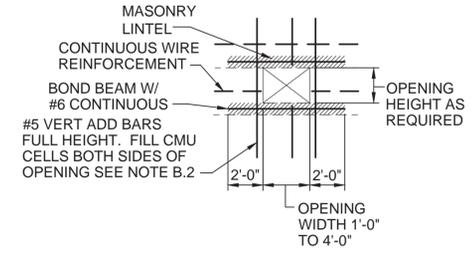


TYPICAL BOND BEAM

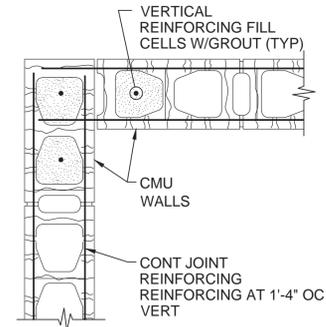


PROVIDE 16" BEARING FOR LINTELS.

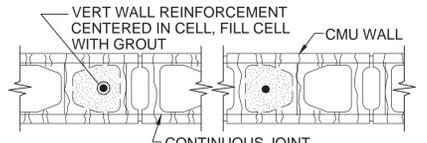
TYPICAL MASONRY LINTEL DETAIL



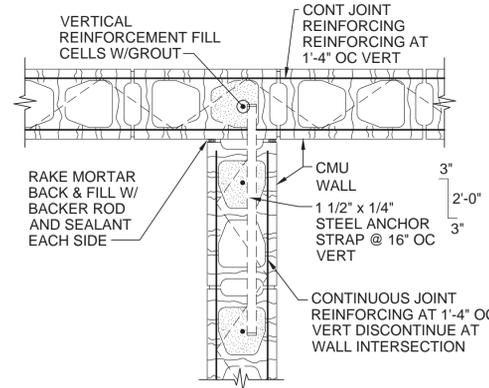
ADD BAR DETAIL AT CMU WALL OPENING



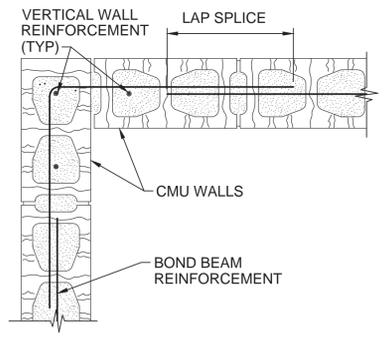
TYPICAL CMU WALL CORNER DETAIL



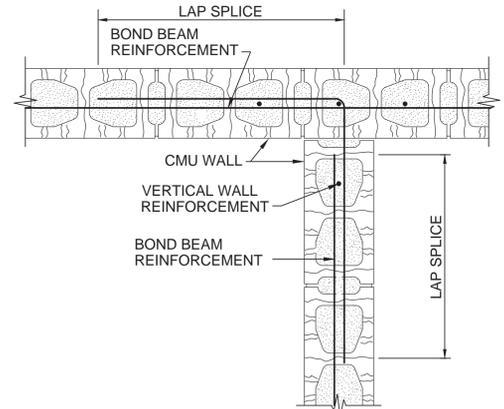
TYPICAL CMU WALL REINFORCING



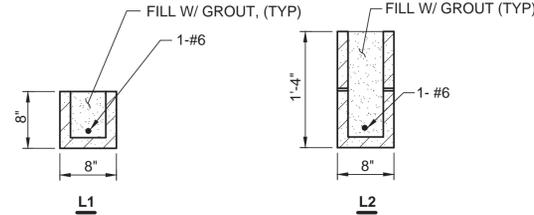
TYPICAL CMU WALL INTERSECTION DETAIL



TYPICAL CMU WALL CORNER DETAIL AT BOND BEAMS



TYPICAL CMU WALL INTERSECTION DETAIL AT BOND BEAMS



CMU LINTEL TYPES
SCALE: 1" = 1'-0"

CMU LINTELS FOR UNSCHEDULED OPENINGS (UNLESS NOTED OTHERWISE)	
8" CMU	
OPENING WIDTH	LINTEL
UP TO 3'-6"	L1
OVER 3'-6" TO 8'-0"	L2

CMU LINTEL NOTES:

1. ALL LINTELS SHALL EXTEND 2'-0" BEYOND EACH SIDE OF OPENING WHEREVER POSSIBLE, UNLESS NOTED OTHERWISE.

Scale For Microfitting
Millimeters
Inches

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	A. HOLMES
designed	A. HOLMES	checked	J. TSOULFIAS



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

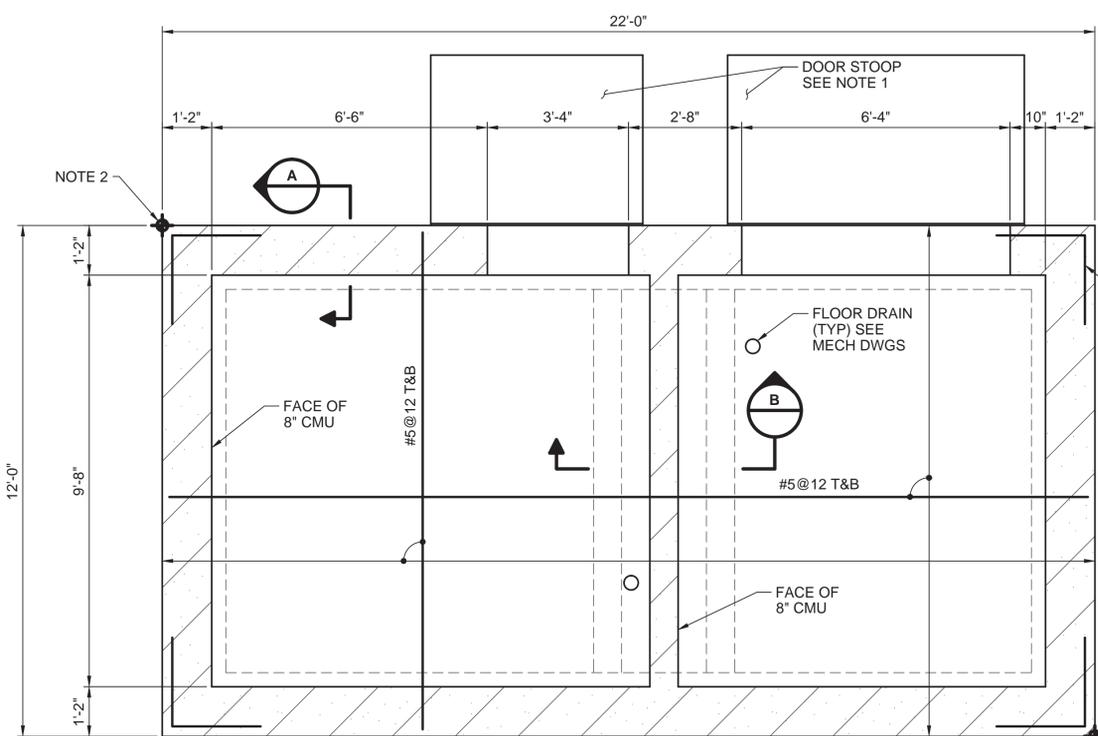
FLUORIDE FEED SYSTEMS
STRUCTURAL MASONRY DETAILS

project	81174	contract	
drawing	S005	rev.	0
sheet	of	sheets	
file	81174_S005.DWG		



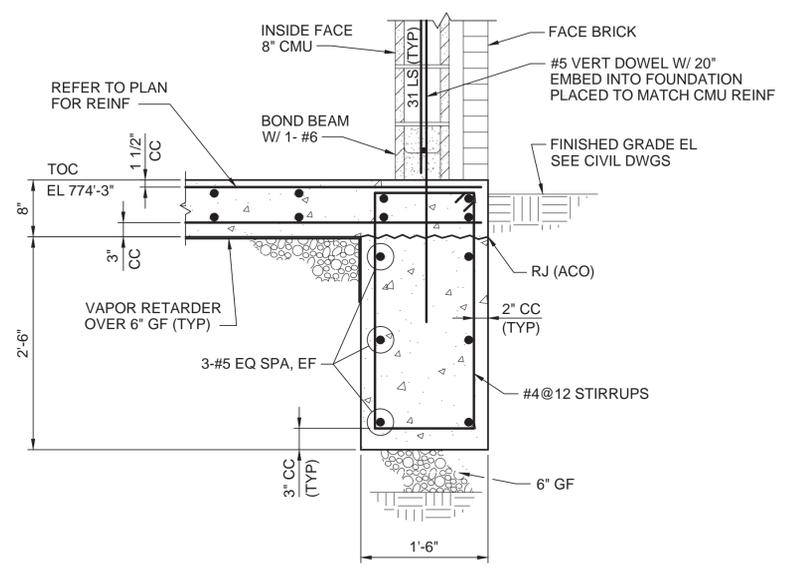
Document has been digitally signed and sealed.
06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

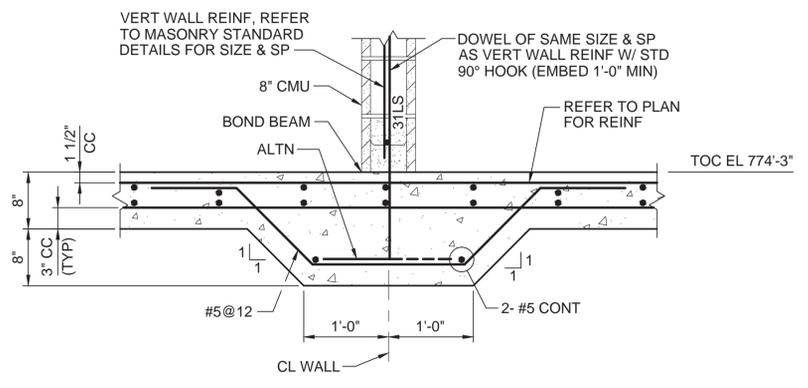


NOTES:
 1. PROVIDE CONCRETE APPROACH SLABS AND DOOR STOOPS AT ALL DOOR OPENINGS PER STANDARD DWGS.
 2. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION COORDINATES.

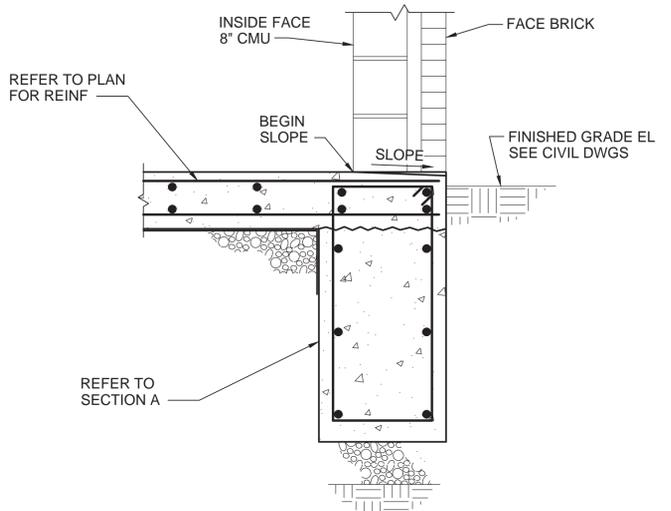
FOUNDATION PLAN - EL 774'-3"
 SCALE IN FEET



SECTION A-A
 SCALE IN FEET



SECTION B-B
 SCALE IN FEET



NOTE: SLOPE 1/4" PER FOOT
TYPICAL FOUNDATION SECTION AT EXTERIOR DOOR
 SCALE IN FEET

GENERAL NOTES FOR FLUORIDE BUILDING:
 1. MATERIALS: SEE GENERAL NOTES ON DWG S002
 2. DESIGN LOADS: SEE GENERAL NOTES ON DWG S002, AND AS INDICATED BELOW:
 A. SUPERIMPOSED FLOOR LIVE LOAD: 250 PSF
 3. SEE CIVIL, ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR MISCELLANEOUS STEEL, CONCRETE, ANCHORS, EMBEDDED ITEMS, SUPPORTS AND OPENINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS.
 4. REFER TO DRAWINGS S002 THROUGH S004 FOR STANDARD DETAILS.
 5. PROOFROLL AND COMPACT SUBGRADE PER SPECIFICATIONS PRIOR TO PLACING COMPACTED GRANULAR FILL.

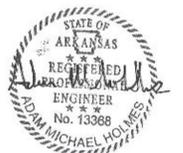


**BURNS
 McDONNELL**
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	JANUARY, 2015	detailed	A. HOLMES
designed	A. HOLMES	checked	J. TSOULIAS



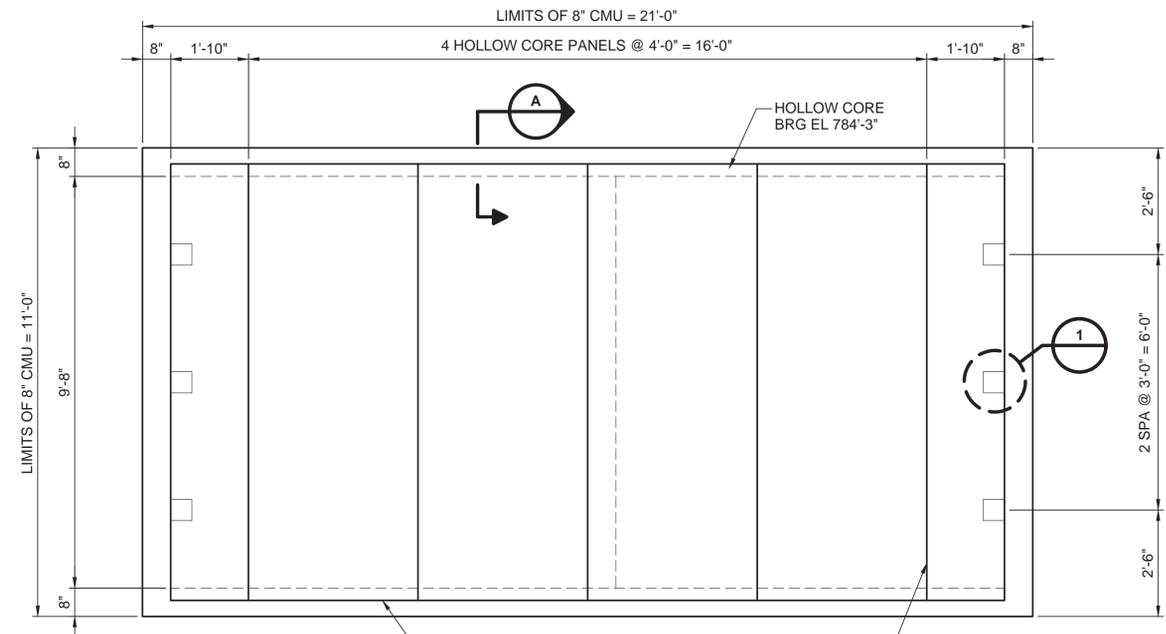
LEE CREEK & LAKE FORT SMITH
 WATER TREATMENT PLANTS



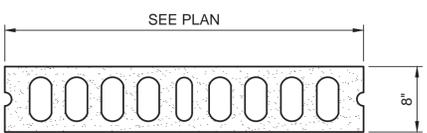
FLUORIDE FEED SYSTEMS
 LAKE FORT SMITH
 FLUORIDE BUILDING
 FOUNDATION PLAN AND SECTIONS

project	81174	contract	
drawing	S101	rev.	0
sheet	of	sheets	
file	81174_S101.DWG		

Document has been digitally signed and sealed.
 06/10/15

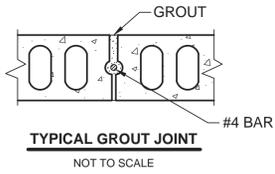


NOTE:
SEE ARCH DWG A301 FOR INTERIOR CMU WALL TO ROOF CONNECTION.



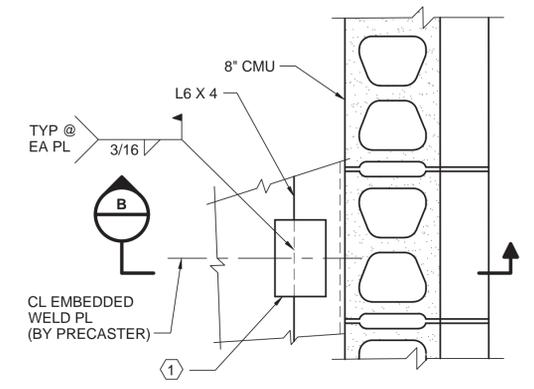
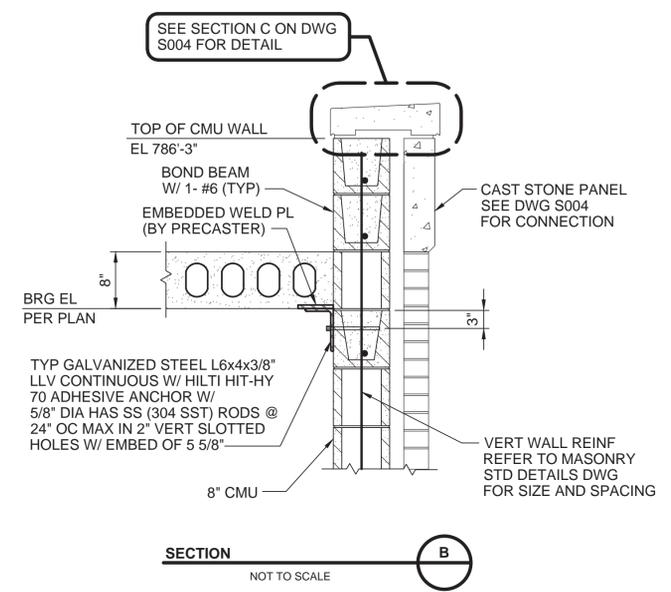
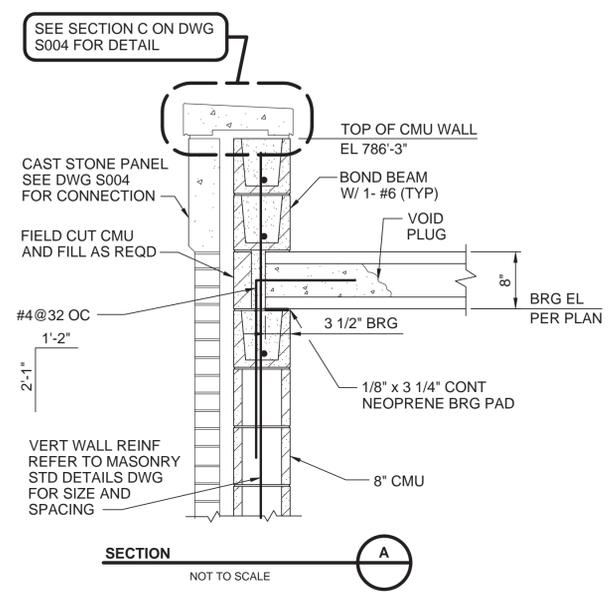
NOTE:
CONFIGURATION OF VOIDS AND GROUT POCKET DEPENDENT UPON MANUFACTURER.

TYPICAL HOLLOW-CORE SLAB
NOT TO SCALE



PRECAST/PRESTRESSED CONCRETE NOTES:

- DESIGN LOADS:
 - SUPERIMPOSED DEAD LOADS = 20 PSF (INCLUDES MECH/ELEC LOADS)
 - SUPERIMPOSED LIVE LOADS = 30 PSF
 - MAXIMUM WIND UPLIFT = NOT APPLICABLE
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE PRECAST CONCRETE MANUFACTURER THE LOCATION AND MAGNITUDE OF ALL LOADS RESULTING FROM THE ATTACHMENT OF MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT TO THE HOLLOW CORE PANELS.
- PRECAST CONCRETE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL BEARING PADS AND EMBEDMENTS, INCLUDING THOSE REQUIRED FOR THE ATTACHMENT OF MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT. EMBEDMENT DETAILS SHOWN HERE ARE MINIMUM REQUIREMENTS ONLY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE PRECAST CONCRETE MANUFACTURER ALL OPENING DIMENSIONS NOT INDICATED. SEE ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN.
- NO HAND OR EXPLOSIVE-DRIVEN INSERTS, PINS, ANCHOR, OR DRIVE-INS OF ANY KIND SHALL BE USED FOR ATTACHMENT OF PIPING, CONDUITS, HANGERS, ETC., TO THE PRECAST CONCRETE MEMBERS UNLESS OTHERWISE INDICATED.
- DIFFERENT HOLLOW CORE PANEL WIDTHS AND ORIENTATION MAY BE USED TO ACHIEVE SAME OVERALL DIMENSIONS AS INDICATED IN PLAN.
- MASONRY DIMENSIONS GIVEN ARE NOMINAL DIMENSIONS.



KEYED NOTES:

1 PRECASTER TO DESIGN STEEL EMBEDDED WELD PLATE & STUDS FOR A LATERAL LOAD OF 2000 LBS PER CONNECTION IN ANY DIRECTION. MINIMUM OF 2 STUDS PER CONNECTION.

DETAIL 1
(TYP 6 PLACES)
NOT TO SCALE



no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



BURNS & McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	A. HOLMES
designed	A. HOLMES	checked	J. TSOULFIAS

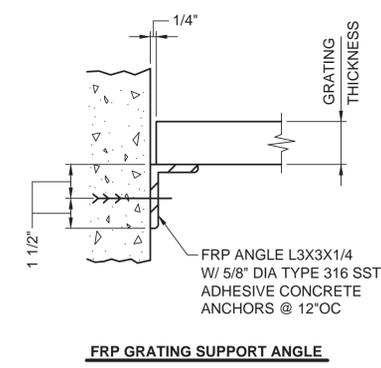
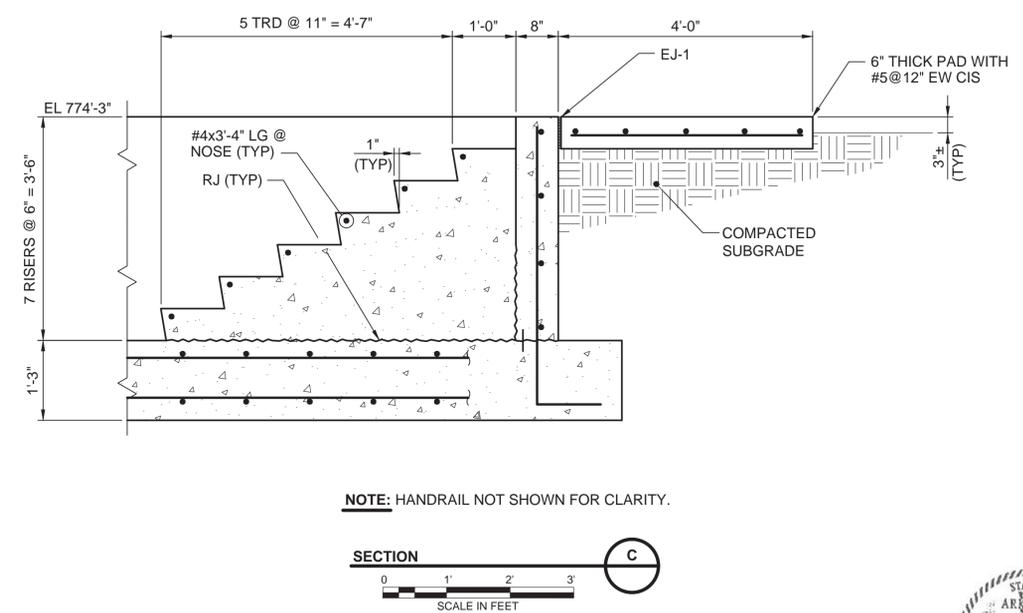
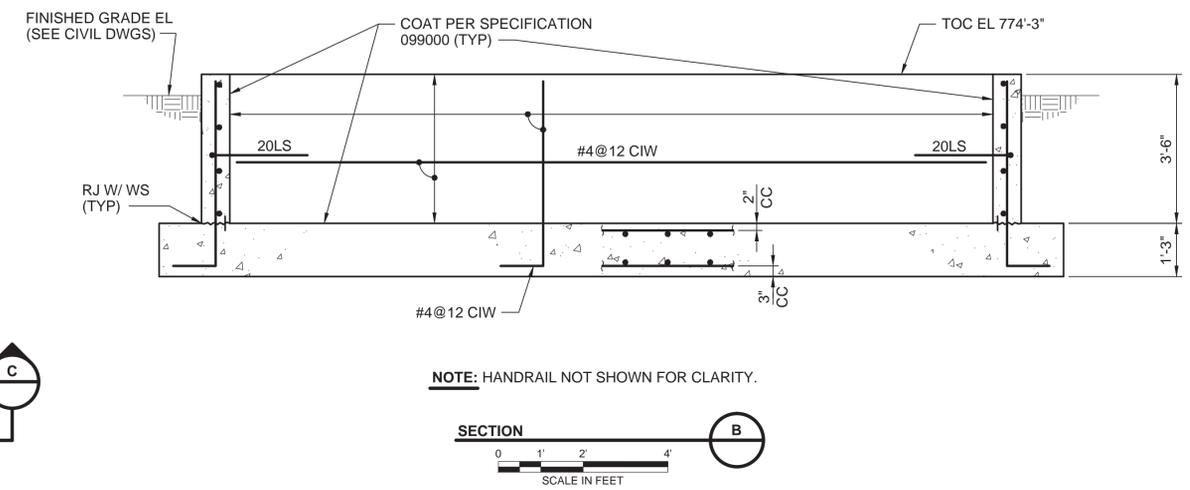
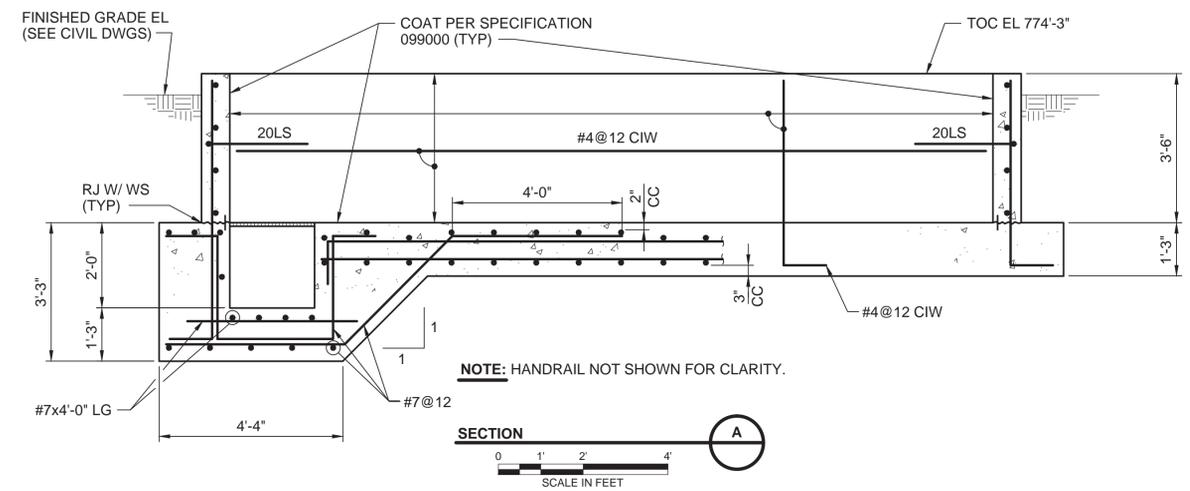
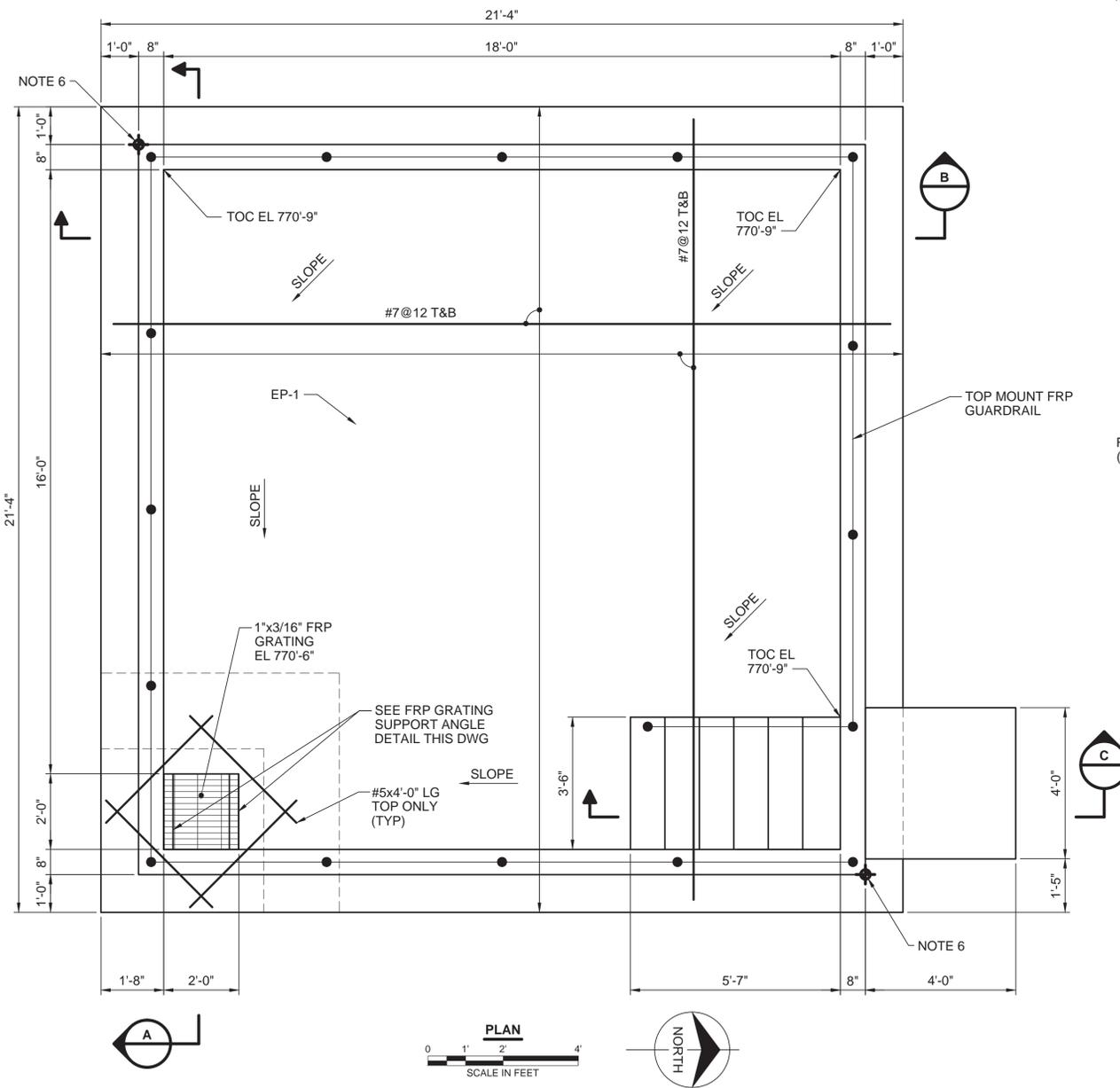
The City of Fort Smith
LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS	
LAKE FORT SMITH FLUORIDE BUILDING ROOF PLAN, SECTIONS AND DETAILS	
project	contract
81174	
drawing	rev.
S102	0
sheet	of sheets
file 81174_S102.DWG	

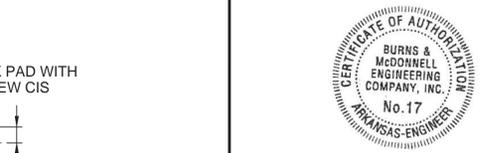
Document has been digitally signed and sealed. 06/10/15

COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



- GENERAL NOTES FOR FERRIC SULFATE CONTAINMENT:**
1. MATERIALS: SEE GENERAL NOTES ON S002
 2. DESIGN LOADS: SEE GENERAL NOTES ON S002, AND AS INDICATED BELOW:
 - A. INTERIOR FLUID PRESSURE: 63 PCF
 - B. SOIL EQUIVALENT FLUID DENSITY: 95 PCF
 - C. ALLOWABLE SOIL BEARING PRESSURE: 1500 PSF
 3. SEE CIVIL, ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR MISCELLANEOUS STEEL, CONCRETE, ANCHORS, EMBEDDED ITEMS, SUPPORTS AND OPENINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS.
 4. REFER TO DRAWINGS S002 THROUGH S004 FOR STANDARD DETAILS.
 5. PROOF ROLL AND COMPACT SUBGRADE PER SPECIFICATIONS PRIOR TO CONSTRUCTING BASE SLAB.
 6. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION COORDINATES.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	designed	detailed	checked
JANUARY, 2015	A. HOLMES	A. HOLMES	J. TSOULFIAS

The City of
Fort Smith
ARKANSAS
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LAKE FORT SMITH
BULK STORAGE CONTAINMENT
PLAN AND SECTIONS

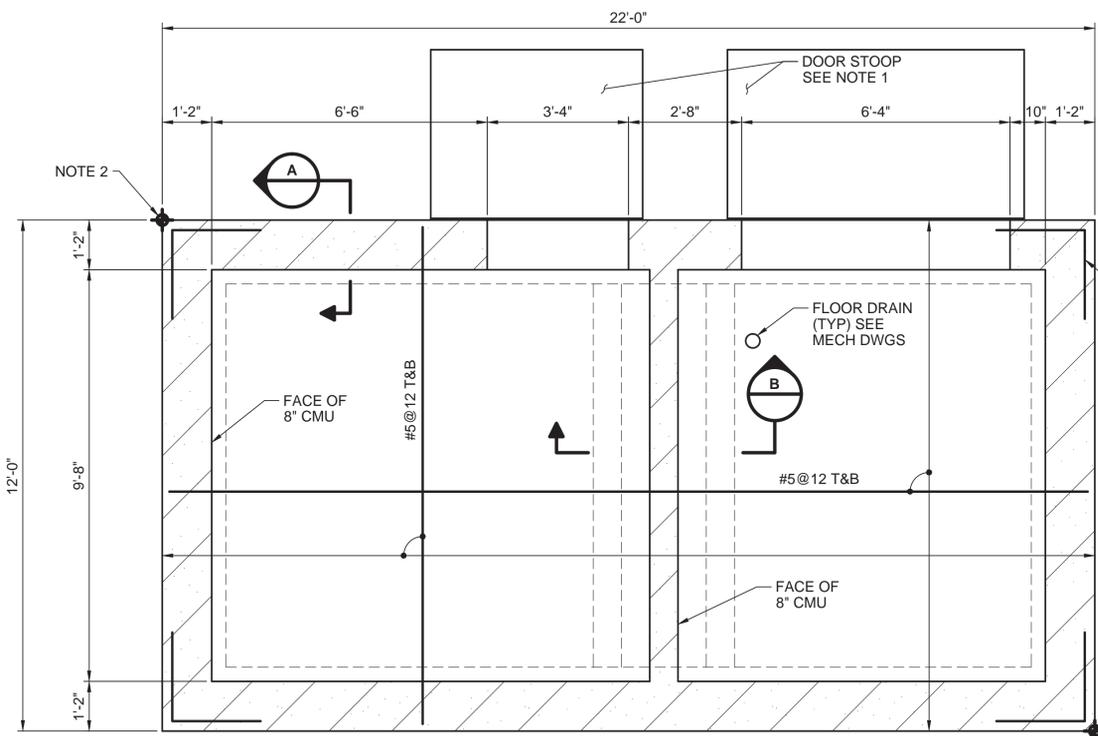
project	contract
81174	
drawing	rev.
S103	0
sheet	of sheets
file 81174_S103.DWG	



Document has been digitally signed and sealed.
06/10/15

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

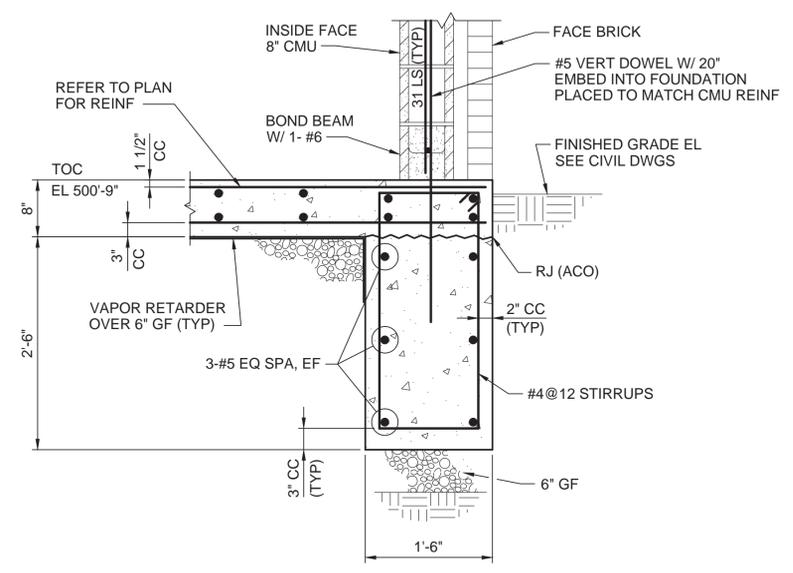


- NOTES:**
1. PROVIDE CONCRETE APPROACH SLABS AND DOOR STOOPS AT ALL DOOR OPENINGS PER STANDARD DWGS.
 2. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION COORDINATES.

FOUNDATION PLAN - EL 501'-9"

0 1' 2' 4'

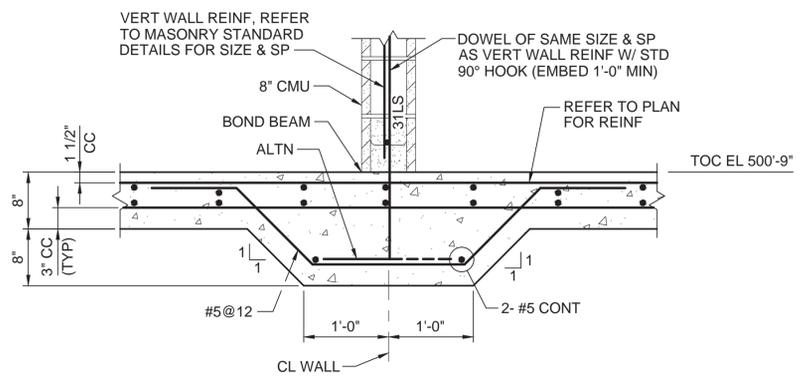
SCALE IN FEET



SECTION A

0 1/2' 1' 2'

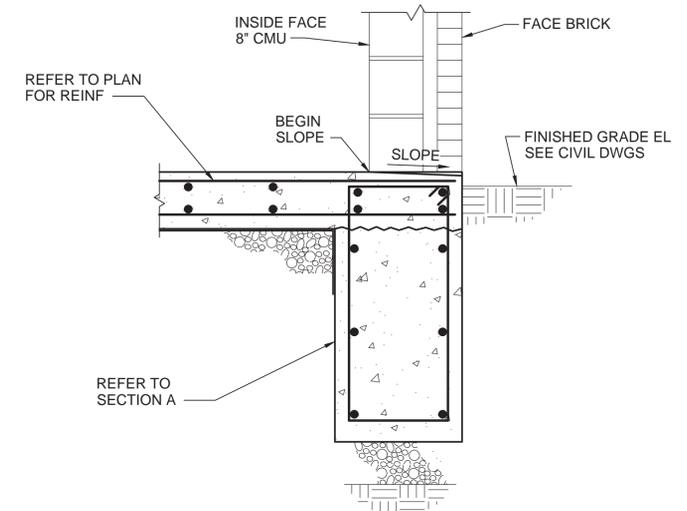
SCALE IN FEET



SECTION B

0 1/2' 1' 2'

SCALE IN FEET



TYPICAL FOUNDATION SECTION AT EXTERIOR DOOR

0 1/2' 1' 2'

SCALE IN FEET

- GENERAL NOTES FOR FLUORIDE BUILDING:**
1. MATERIALS: SEE GENERAL NOTES ON DWG S002
 2. DESIGN LOADS: SEE GENERAL NOTES ON DWG S002, AND AS INDICATED BELOW:
A. SUPERIMPOSED FLOOR LIVE LOAD: 250 PSF
 3. SEE CIVIL, ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR MISCELLANEOUS STEEL, CONCRETE, ANCHORS, EMBEDDED ITEMS, SUPPORTS AND OPENINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS.
 4. REFER TO DRAWINGS S002 THROUGH S004 FOR STANDARD DETAILS.
 5. PROOFROLL AND COMPACT SUBGRADE PER SPECIFICATIONS PRIOR TO PLACING COMPACTED GRANULAR FILL.



**BURNS
MCDONNELL**

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	A. HOLMES
designed	A. HOLMES	checked	J. TSOULIAS



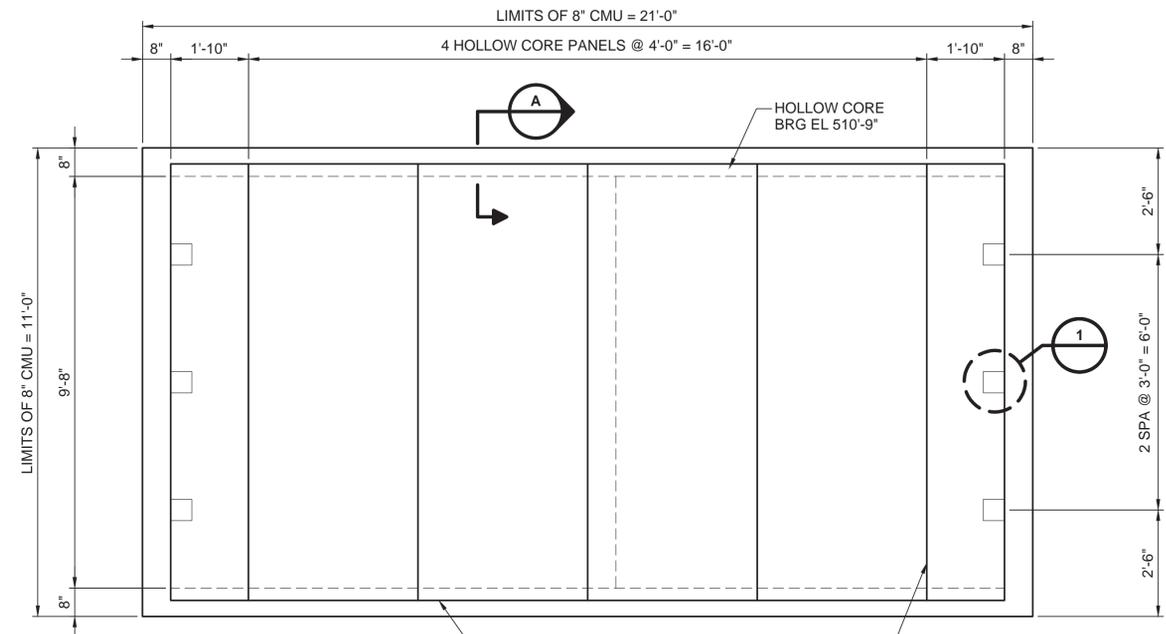
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK
FLUORIDE BUILDING
FOUNDATION PLAN AND SECTIONS

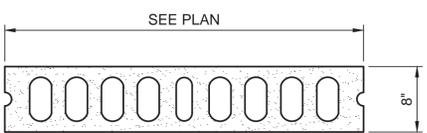
project	81174	contract	
drawing	S201	rev.	0
sheet	of	sheets	
file	81174_S201.DWG		



Document has been digitally signed and sealed.
06/10/15

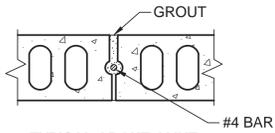


NOTE:
SEE ARCH DWG A301 FOR INTERIOR CMU WALL TO ROOF CONNECTION.

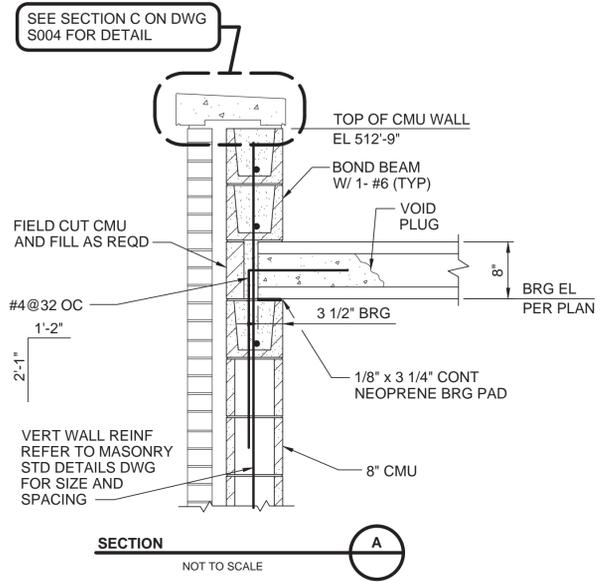


NOTE:
CONFIGURATION OF VOIDS AND GROUT POCKET DEPENDENT UPON MANUFACTURER.

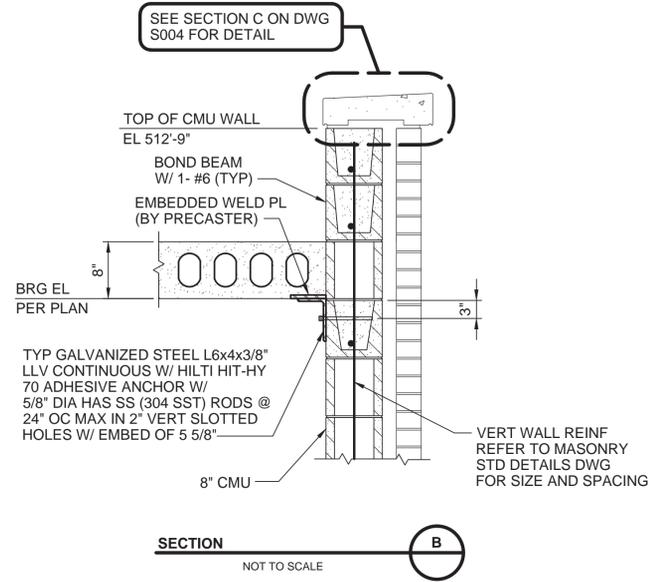
TYPICAL HOLLOW-CORE SLAB
NOT TO SCALE



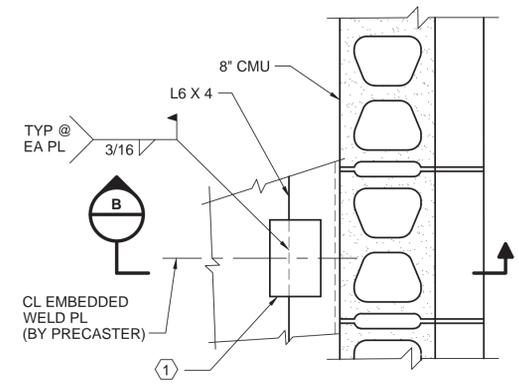
TYPICAL GROUT JOINT
NOT TO SCALE



SECTION A
NOT TO SCALE



SECTION B
NOT TO SCALE



KEYED NOTES:
① PRECASTER TO DESIGN STEEL EMBEDDED WELD PLATE & STUDS FOR A LATERAL LOAD OF 2000 LBS PER CONNECTION IN ANY DIRECTION. MINIMUM OF 2 STUDS PER CONNECTION.

DETAIL 1
TYP 6 PLACES
NOT TO SCALE

PRECAST/PRESTRESSED CONCRETE NOTES:

- DESIGN LOADS:
 - SUPERIMPOSED DEAD LOADS = 20 PSF (INCLUDES MECH/ELEC LOADS)
 - SUPERIMPOSED LIVE LOADS = 30 PSF
 - MAXIMUM WIND UPLIFT = NOT APPLICABLE
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE PRECAST CONCRETE MANUFACTURER THE LOCATION AND MAGNITUDE OF ALL LOADS RESULTING FROM THE ATTACHMENT OF MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT TO THE HOLLOW CORE PANELS.
- PRECAST CONCRETE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL BEARING PADS AND EMBEDMENTS, INCLUDING THOSE REQUIRED FOR THE ATTACHMENT OF MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT. EMBEDMENT DETAILS SHOWN HERE ARE MINIMUM REQUIREMENTS ONLY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE PRECAST CONCRETE MANUFACTURER ALL OPENING DIMENSIONS NOT INDICATED. SEE ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN.
- NO HAND OR EXPLOSIVE-DRIVEN INSERTS, PINS, ANCHOR, OR DRIVE-INS OF ANY KIND SHALL BE USED FOR ATTACHMENT OF PIPING, CONDUITS, HANGERS, ETC., TO THE PRECAST CONCRETE MEMBERS UNLESS OTHERWISE INDICATED.
- DIFFERENT HOLLOW CORE PANEL WIDTHS AND ORIENTATION MAY BE USED TO ACHIEVE SAME OVERALL DIMENSIONS AS INDICATED IN PLAN.
- MASONRY DIMENSIONS GIVEN ARE NOMINAL DIMENSIONS.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



BURNS & McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	A. HOLMES
designed	A. HOLMES	checked	J. TSOULFIAS



LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK
FLUORIDE BUILDING
ROOF PLAN, SECTIONS AND DETAILS

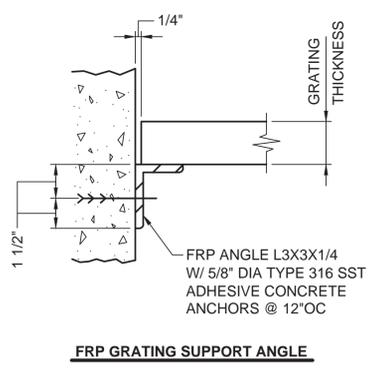
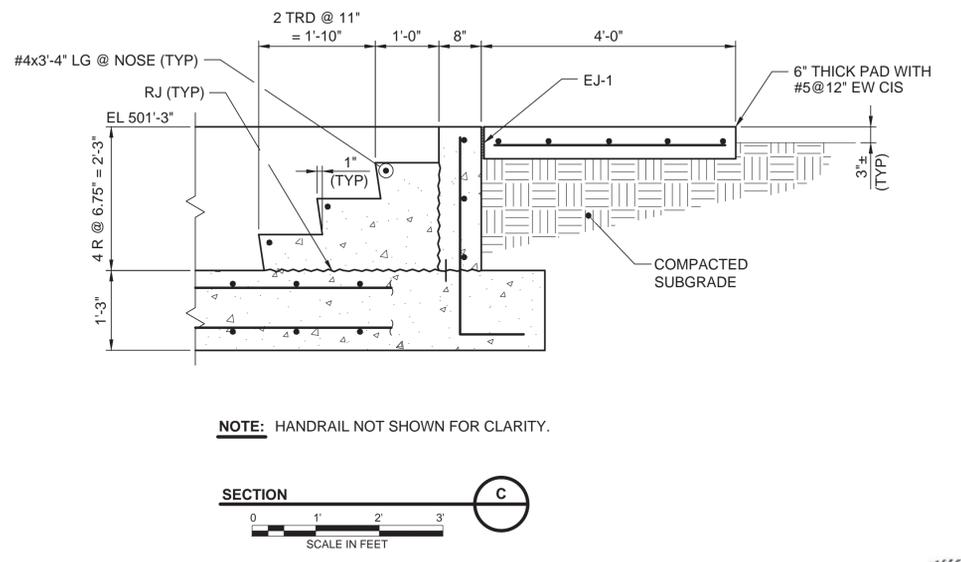
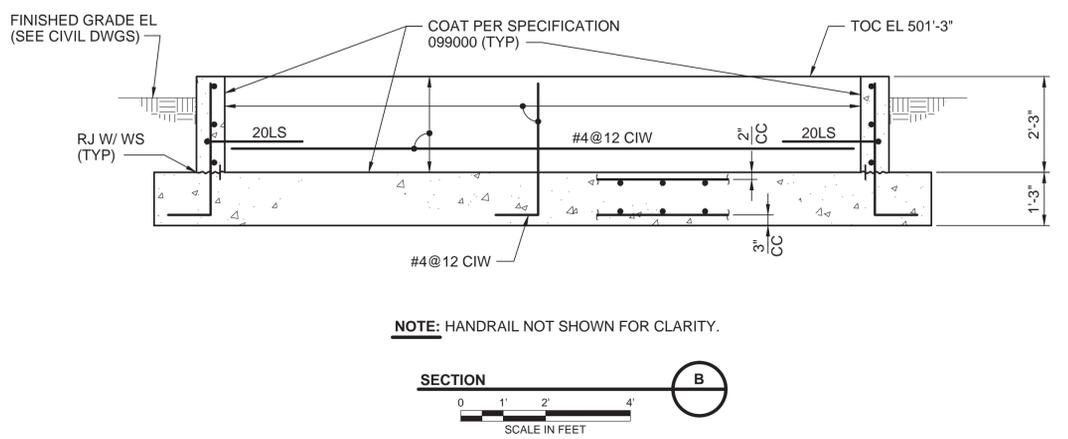
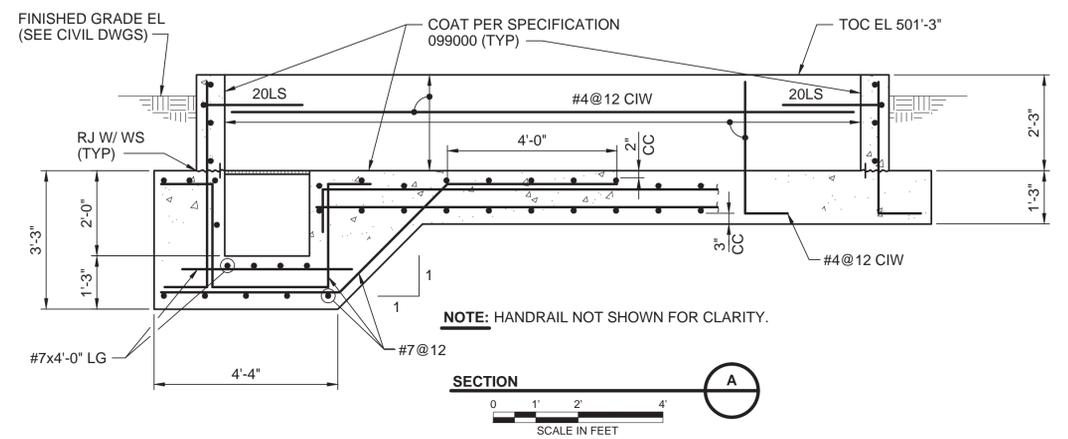
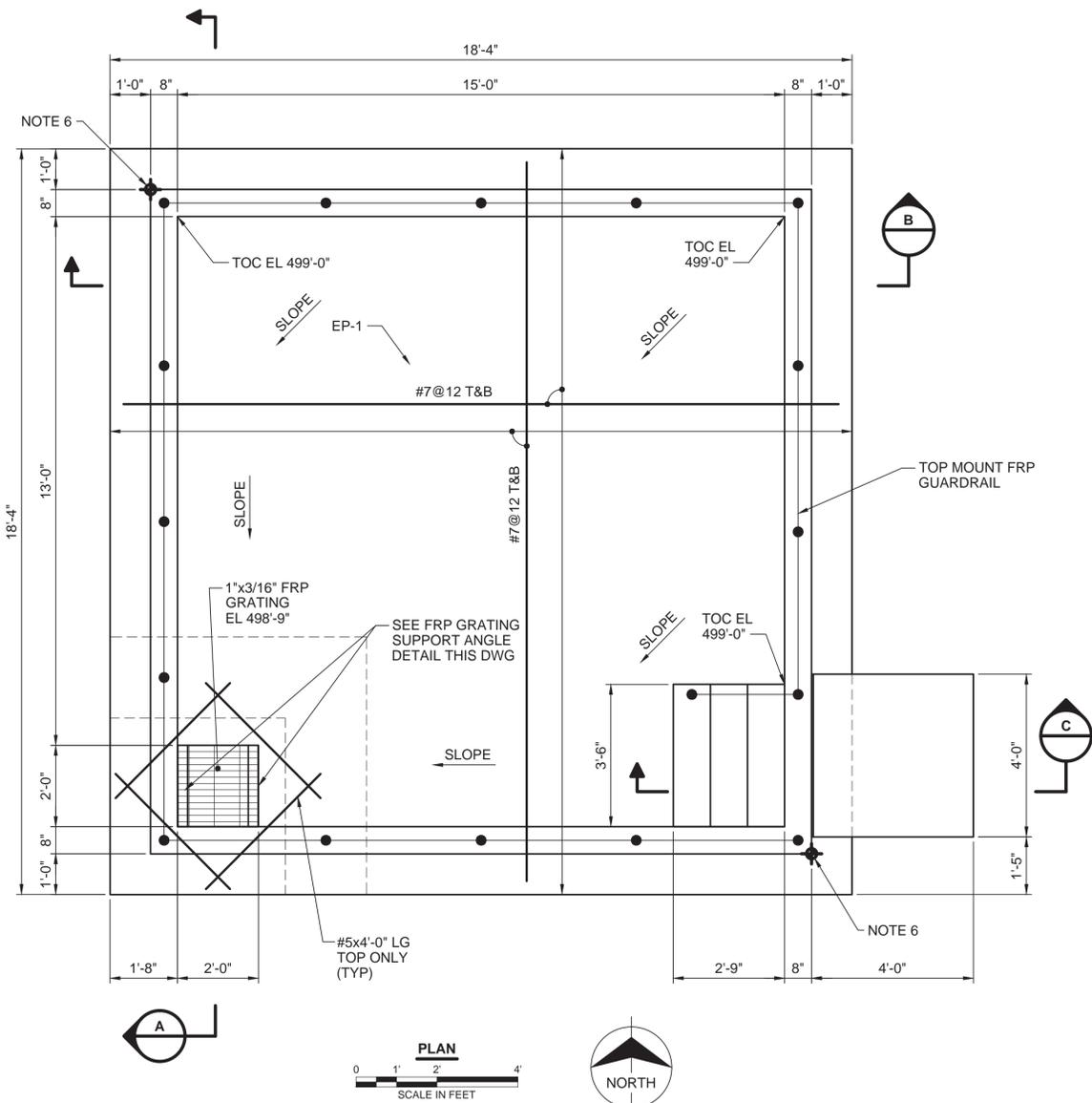
project	81174	contract	
drawing	S202	rev.	0
sheet	of	sheets	
file	81174_S202.DWG		



Document has been digitally signed and sealed.
06/10/15

COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



GENERAL NOTES FOR FERRIC SULFATE CONTAINMENT:

- MATERIALS: SEE GENERAL NOTES ON S002
- DESIGN LOADS: SEE GENERAL NOTES ON S002, AND AS INDICATED BELOW:
 - INTERIOR FLUID PRESSURE: 63 PCF
 - SOIL EQUIVALENT FLUID DENSITY: 95 PCF
 - ALLOWABLE SOIL BEARING PRESSURE: 1500 PSF
- SEE CIVIL ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR MISCELLANEOUS STEEL, CONCRETE, ANCHORS, EMBEDDED ITEMS, SUPPORTS AND OPENINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS.
- REFER TO DRAWINGS S002 THROUGH S004 FOR STANDARD DETAILS.
- PROOF ROLL AND COMPACT SUBGRADE PER SPECIFICATIONS PRIOR TO CONSTRUCTING BASE SLAB.
- SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION COORDINATES.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

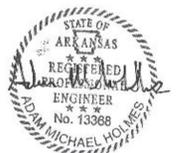
date	detailed
JANUARY, 2015	A. HOLMES
designed	checked
A. HOLMES	J. TSOULFIAS



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK
BULK STORAGE CONTAINMENT
PLAN AND SECTIONS

project	contract
81174	
drawing	rev.
S203	0
sheet	of sheets
file 81174_S203.DWG	



Document has been digitally signed and sealed.
06/10/15

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

PIPING ABBREVIATIONS

B x S	BELL AND SPIGOT	INV	INVERT
CIP	CAST-IN-PLACE	MGD	MILLION GALLONS PER DAY
CL	CENTERLINE	MJ	MECHANICAL JOINT
CCV	CUSHIONED CHECK VALVE	NPW	NON-POTABLE WATER
DIA	DIAMETER	PE	PLAIN END
DIP	DUCTILE IRON PIPE	PS	PIPE SUPPORT
DJ	DISMANTLING JOINT	PV	PLUG VALVE
DN	DOWN	RCP	REINFORCED CONCRETE PIPE
EL	ELEVATION	RMJ	RESTRAINED MECHANICAL JOINT
FLG	FLANGE	SW	SOLVENT WELD
FM	MAGNETIC IN-LINE FLOW METER	TYP	TYPICAL
FT	FEET	WP	WALL PIPE
FH	FIRE HYDRANT		
GV	GATE VALVE		

GENERAL NOTES

1. THE CENTERLINE COORDINATES SHOWN FOR THE PROPOSED YARD PIPING LAYOUT AND ALIGNMENTS ARE FOR GENERAL HORIZONTAL LAYOUT LOCATION AND ORIENTATION. THE ACTUAL LOCATION OF THE EXISTING FEATURE MAY VARY FROM FIELD LOCATION. CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES (DEPTH, NORTHING AND EASTING) PRIOR TO STAKING YARD PIPING ALIGNMENTS AND CONSTRUCTION ACTIVITIES.
2. CONTRACTOR SHALL PROVIDE PROTECTION TO PREVENT UNDERMINING OR DAMAGING THE STRUCTURAL INTEGRITY OF ALL POWER POLES, FENCES, BLOCK WALLS, SCREEN WALLS, RETAINING WALLS OR OTHER UTILITY POLES THAT PARALLEL OR CROSS THE YARD PROCESS PIPING DESIGN LAYOUTS, AND MAKE ARRANGEMENTS WITH THE OWNING UTILITY AS REQUIRED TO PROVIDE TEMPORARY SUPPORT OR PROTECTION DURING CONSTRUCTION WORK. METHOD OF CROSSING AND/OR SUPPORT OF UTILITIES SHALL BE APPROVED BY UTILITY OWNER.
3. MAINTAIN THE MAXIMUM SEPARATION DISTANCE POSSIBLE BETWEEN WATER MAINS, SEWER LINES AND OTHER UTILITY LINES AS REQUIRED BY THE PREVAILING STATE, CITY AND/OR COUNTY REQUIREMENTS. SOME MINOR DEVIATION OF THE PIPING DESIGN LAYOUT ALIGNMENTS MAY BE ALLOWED DEPENDING ON ACTUAL LOCATION OF EXISTING WATER, SEWER AND UTILITY LINES. IF IT IS DETERMINED DURING FINAL FIELD LOCATE THAT MAXIMUM SEPARATION CANNOT BE MAINTAINED, CONTRACTOR SHALL FULLY ENCASE SANITARY SEWER IN CONCRETE AS INDICATED IN STANDARD DETAILS.
4. CONTRACTOR SHALL PROVIDE CONTINUOUS PROTECTION AGAINST THE ENTRANCE OF DRAINAGE INTO EXCAVATIONS OF INSTALLED PIPE.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL, AT NO ADDITIONAL COST TO THE OWNER, ANY BENDS OR FITTINGS NECESSARY TO MAKE THE PROPER HORIZONTAL OR VERTICAL ADJUSTMENTS WHICH CANNOT BE MADE BY DEFLECTING JOINTS TO THE LIMITS SPECIFIED BY THE PIPE MANUFACTURER.
6. ALL PLANT SERVICE WATER (PSW) LESS THAN 4-INCHES SHALL BE CPVC AND MEET ALL APPLICABLE AWWA STANDARDS FOR SCHEDULE 80 AND POTABLE WATER.
7. ALL CHEMICAL FEED LINES UNDERNEATH PAVEMENT SHALL BE HOUSED IN A LARGER CARRIER PIPE.
8. ELEVATIONS INDICATED FOR PIPE AND/OR FITTINGS LESS THAN 4-INCHES SHALL BE MET TO MAINTAIN CLEARANCES FROM NEW AND/OR EXISTING UTILITIES; ELSE, CONTRACTOR SHALL MAINTAIN A MINIMUM BURY DEPTH OF 3.0 FT AND MINIMIZE, TO THE BEST EXTENT POSSIBLE, HIGH POINTS IN THE LINE.
9. CONCRETE ENCASE ANY NEW AND/OR EXISTING PIPELINES THAT COME WITHIN LESS THAN 1.0 FEET OF VERTICAL CLEARANCE OF ANY NEW AND/OR EXISTING UTILITIES. CONCRETE ENCASE ANY SANITARY SEWER LINES CROSSING EXISTING OR NEW UTILITIES NO LESS THAN 5.0' ON BOTH SIDES.
10. CONTRACTOR SHALL UNCOVER ALL TIE-IN LOCATIONS TO EXISTING PIPE LINES WITHIN 30 DAYS OF CONSTRUCTION START AND SUBMIT REPORT TO ENGINEER DETAILING PIPE SIZE, LOCATION, MATERIAL, JOINT TYPE AND PLANNED CONNECTION DETAIL.
11. RESTRAIN ALL JOINTS ON NEW PIPING THAT TIES INTO EXISTING PIPING. THRUST AND STRADDLE BLOCKS SHALL BE USED ON EXISTING LINES AT THE TIE-IN LOCATIONS. SEE YARD PIPING DRAWINGS FOR LOCATION AND PROCESS PIPING DETAILS DRAWING.
12. WATER LINES WHICH ARE TO BE ABANDONED SHALL REMAIN IN PLACE EXCEPT WHERE REMOVAL IS REQUIRED FOR CONSTRUCTION OF IMPROVEMENTS OR REMOVAL IS SPECIFICALLY CALLED FOR ON THE DRAWINGS. REMAINING PIPE ENDS OF ABANDONED LINES SHALL BE FILLED WITH A CONCRETE PLUG AND WATERTIGHT. EXISTING FIRE HYDRANTS TO BE ABANDONED SHALL BE REMOVED. GATE VALVES WHICH ARE TO BE ABANDONED IN PLACE SHALL HAVE THE VALVE BOXES REMOVED. THE ABANDONED FIRE HYDRANTS, GATE VALVES, VALVE BOXES AND FITTINGS SHALL REMAIN THE PROPERTY OF THE OWNER. COORDINATE SALVAGEABLE ITEMS WITH OWNER.
13. SEE STRUCTURAL ("S") DRAWINGS FOR DETAILS AND DESIGN OF ALL STRUCTURAL COMPONENTS OF THIS PROJECT.
14. TOPOGRAPHIC SURVEY, GROUND & CONTROL AND UTILITY INFORMATION WAS PROVIDED BY:
MICKLE WAGNER COLEMAN
3434 COUNTRY CLUB AVENUE
FORT SMITH, AR 72903
PHONE: (479) 649-8484
15. CONTRACTOR SHALL COORDINATE THE OPERATION OF ANY EXISTING EQUIPMENT FOR CONSTRUCTION RELATED ACTIVITIES WITH OWNER. SEE SPECIFICATION SECTION 011100 FOR OWNER'S USE OF PREMISES, PARAGRAPH 1.04, AND WORK SEQUENCE, PARAGRAPH 1.05, FOR INFORMATION AND REQUIREMENTS.

NOTE:
THIS LEGEND IS TAKEN FROM A STANDARD LEGEND AND NOT ALL ITEMS OR EQUIPMENT AS DESIGNATED HEREON ARE USED ON THIS PROJECT.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	MARCH, 2015	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL



**FLUORIDE FEED SYSTEMS
GENERAL NOTES
AND ABBREVIATIONS**

project	81174	contract	
drawing	D001	rev.	0
sheet	of	sheets	
file	81174_D001.DWG		



Dana Bruner
This document has been digitally signed.
06/10/15



PIPING

- GATE VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- PLUG VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- ANGLE VALVE
- RELIEF OR SAFETY VALVE
- PRESSURE AND VACUUM RELIEF VALVE
- PRESSURE RELIEF VALVE
- NEEDLE VALVE
- DIAPHRAGM VALVE
- BALL VALVE
- SELF-CONTAINED PRESSURE REDUCING (REGULATING VALVE)
- SURGE RELIEF VALVE
- BACK PRESSURE VALVE
- CORPORATION STOP
- AIR RELEASE VALVE
- VACUUM VALVE
- AIR AND VACUUM VALVE
- COMBINATION AIR VALVE
- DIAPHRAGM SEAL
- VACUUM REGULATOR VALVE

- BACKFLOW PREVENTER
- VACUUM BREAKER
- MOISTURE SEPARATOR
- IN-LINE FLOW METER
- ROTAMETER
- SIGHT FLOW INDICATOR
- FLEXIBLE HOSE
- EXPANSION ELEMENT (JOINT)
- FLEXIBLE BALL JOINT
- BASKET TYPE STRAINER
- TEE TYPE STRAINER
- Y-TYPE STRAINER
- CONICAL STRAINER
- DUPLEX STRAINER
- SLEEVE COUPLING (SC)
- HARNESSED SLEEVE COUPLING (HSC)
- INSULATED SLEEVE COUPLING (ISC)
- FLANGED COUPLING ADAPTER (FCA)
- DRAINER ASSEMBLY
- SAMPLE COOLER
- UNION
- PIPE ANCHOR
- REDUCER
- HOSE CONNECTION
- REMOVABLE CAP
- BLIND FLANGE
- CLEANOUT
- QUICK DISCONNECT COUPLING
- EXHAUST TO ATMOSPHERE (INSIDE)
- EXHAUST TO ATMOSPHERE (OUTSIDE)
- CALIBRATION COLUMN
- PULSATION DAMPENERS
- SLIDE GATE
- DRAIN

PLC I/O SYMBOLS

- ANALOG INPUT TO PLC
- ANALOG OUTPUT FROM PLC
- DIGITAL INPUT TO PLC
- DIGITAL OUTPUT FROM PLC

INSTRUMENT SYMBOLS

- LOCALLY MOUNTED FIELD INSTRUMENT
- MOUNTED ON PANEL FRONT
- MOUNTED INSIDE PANEL
- ULTRASONIC LEVEL

INSTRUMENT SOCIETY OF AMERICA

LETTER	FIRST LETTER(S)		SUCCEEDING LETTER		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (*)		ALARM		
B	BURNER, COMBUSTION		USERS CHOICE (*)	CLOSE, STOP, DECREASE	USERS CHOICE (*)
C	CONDUCTIVITY		CLOSED	CONTROL	CLOSED
D	DENSITY (SG)	DIFFERENTIAL		OPEN, START, INCREASE	
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)	EMERGENCY	
F	FLOW RATE	RATIO/BIAS			
G	GAUGE		GLASS, VIEWING	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (AMPS)		INDICATE		
J	POWER	SCAN			
K	TIME, SCHEDULE	RATE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOTION, MOTOR	MOMENTARY			MIDDLE, INTRMDT
N	TORQUE		USERS CHOICE (*)	ISOLATOR	ON, OPERATE
O	USERS CHOICE (*)		ORIFICE, OPEN		OPENED
P	PRESSURE, VAC		POINT (TEST CONN)		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		REMOTE, AUTO		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (*)		MULTIFUNCTIONAL (*)		
V	VIBRATION			VALVE, DAMPER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (*)	X-AXIS	UNCLASSIFIED (*)	TRANSDUCER	
Y	EVENT, STATE (*)	Y-AXIS		RELAY, COMPUTER	
Z	POSITION	Z-AXIS		DRIVE, ACTUATOR	

(*) WHEN USED EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL.

INSTRUMENT/CONTROL SWITCH NOTATION

TAG NUMBER: AAA-BBB-XX-YYY

LOCATION DESIGNATOR
EQUIPMENT DESIGNATOR
ISA FIRST LETTER
INSTRUMENT/LOOP NUMBER

BBB ZZZ
XX YY

XX = INSTRUMENT TYPE
YYY = NUMBER
ZZZ = DESCRIPTOR:

CG	COMBUSTIBLE GAS
CH	CHLORINE
CL	CLOSE
ES	EMERGENCY STOP
FAIL	FAILURE
F/R	FORWARD-REVERSE
H/A	HAND-AUTO
H/O/A	HAND-OFF-AUTO
H/O/R	HAND-OFF-REMOTE
L/O/R	LOCAL-OFF-REMOTE
L/R	LOCAL-REMOTE
OP	OPEN
O/C	OPEN-CLOSE
OL	OVERLOAD
O/C/A	OPEN-CLOSE-AUTO
O/O	ON-OFF
O/S/C	OPEN-STOP-CLOSE
pH	pH
RUN	RUN
S/S	START-STOP
TURB	TURBIDITY
UVT	UV TRANSMITTANCE

ROTATING MACHINES

- METERING PUMP
- MOTOR

LINESTYLES AND INTERFACE SYMBOLS

PROCESS LINE
EXISTING PROCESS LINE
ELECTRICAL SIGNAL (ANALOG)
ELECTRICAL SIGNAL (DISCRETE)
ELECTRICAL SIGNAL (POWER)
SOFTWARE OR DATA LINK
SPECIAL SIGNAL CABLE
COMPRESSED/INSTRUMENT AIR

CABINET BOUNDARY
DIRECTION OF FLOW
SIGNAL CONNECTION
CROSSOVER - NO CONNECTION

CONNECTOR NUMBER → SERVICE DESCRIPTION
[NO. | P&ID NO. | ORIGIN/DESTINATION]

CONNECTOR NUMBER → SERVICE DESCRIPTION
[NO. | P&ID NO. | ORIGIN/DESTINATION]

BROKEN SIGNAL LINE
X = SAME SHEET DESTINATION NO.

CONTROL INTERLOCK

INTERFACE FROM PROCESS EXTERNAL TO PROJECT

INTERFACE FROM PROCESS EXTERNAL TO PROJECT

MOTOR STARTER SYMBOLS

- MOTOR STARTER

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	FEBRUARY, 2015	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL



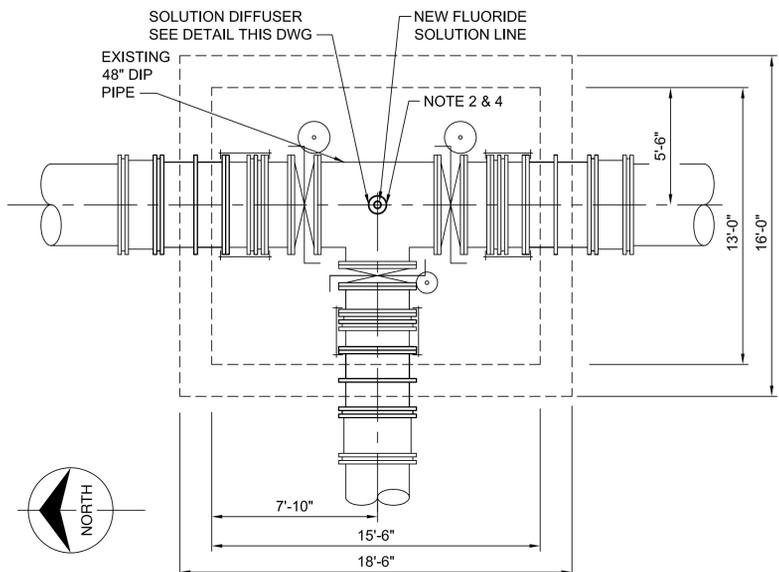
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
PROCESS AND INSTRUMENTATION LEGEND

project	81174	contract	
drawing	D002	rev.	0
sheet	of	sheets	
file	81174_D002.DWG		

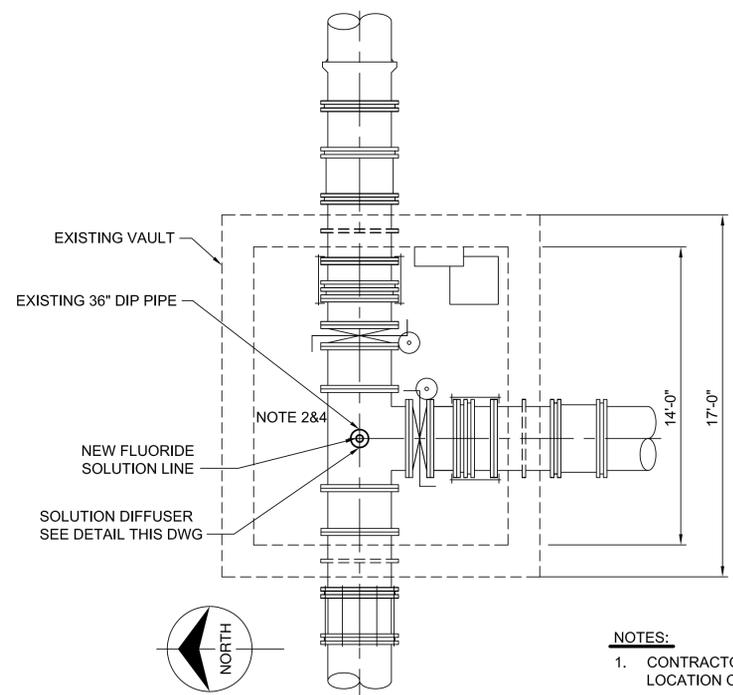


Dana Bruner
This document has been digitally signed.
06/10/15



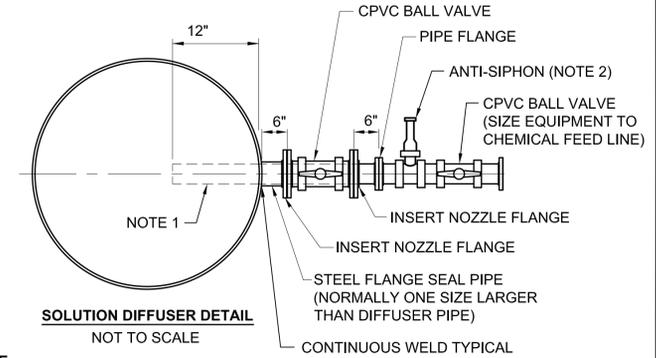
- NOTES:**
1. CONTRACTOR SHALL DETERMINE APPROPRIATE LOCATION OF ALL NEW VAULT PENETRATIONS.
 2. TIE INTO EXISTING 48-INCH DIP PIPE AT TEE.
 3. CARRIER PIPE TO END WALL PENETRATION.
 4. CONTRACTOR TO DETERMINE LOCATION OF FLUORIDE LINE TAP. LOCATIONS SHOWN ARE APPROXIMATE.

**LAKE FORT SMITH EXISTING VALVE
PRIMARY APPLICATION POINT
NOT TO SCALE**



- NOTES:**
1. CONTRACTOR SHALL DETERMINE APPROPRIATE LOCATION OF ALL NEW VAULT PENETRATIONS.
 2. TIE INTO EXISTING 36" DIP PIPE AT TEE.
 3. CARRIER PIPE TO END WALL PENETRATION.
 4. CONTRACTOR TO DETERMINE LOCATION OF FLUORIDE LINE TAP. LOCATIONS SHOWN ARE APPROXIMATE.

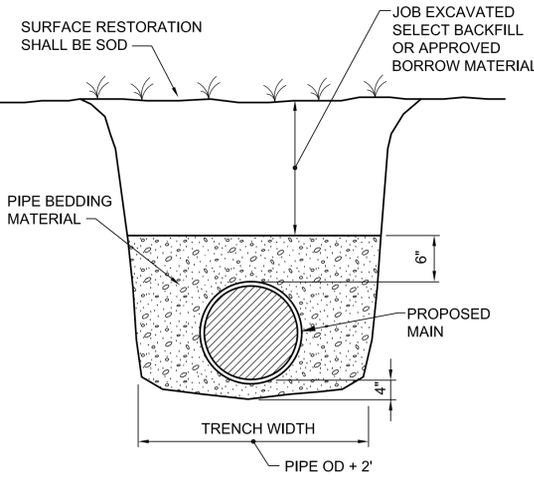
**LAKE FORT SMITH EXISTING VALVE VAULT
SECONDARY APPLICATION POINT
NOT TO SCALE**



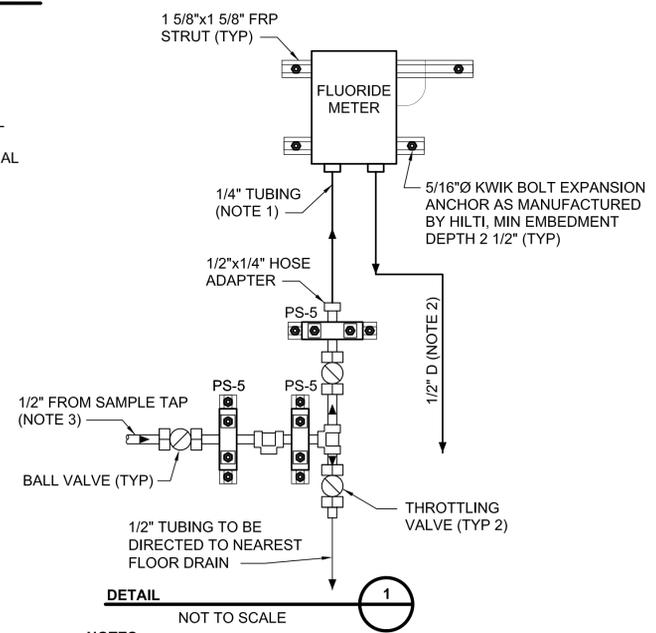
- NOTE:**
1. 1 1/2-INCH SCHEDULE 80 CPVC FLUOSILICIC ACID SOLUTION TUBE.
 2. CPVC DIAPHRAGM TYPE ANTI-SIPHON DEVICE.

**SOLUTION DIFFUSER DETAIL
NOT TO SCALE**

Scale For Micromining
Inches
Millimeters

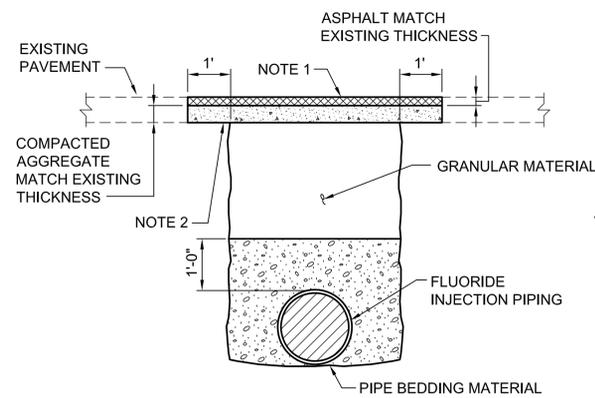


**TYPICAL TRENCH DETAIL
NOT TO SCALE**



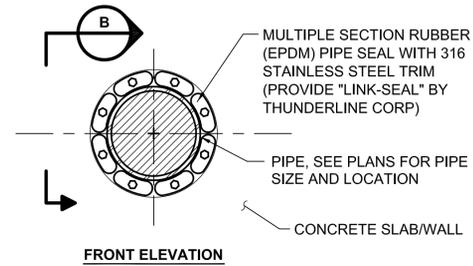
**DETAIL
NOT TO SCALE**

- NOTES:**
1. 1/4" SUPPLY TUBING PER INSTRUMENTATION MANUFACTURER'S RECOMMENDATION.
 2. 1/2" DRAIN TUBING PER INSTRUMENTATION MANUFACTURER'S RECOMMENDATION. TO BE DIRECTED TO NEAREST FLOOR DRAIN.
 3. CONNECT TO EXISTING SAMPLE LINE IN BUILDING AND ROUTE 1/2-INCH PVC PIPE TO FLUORIDE METER LOCATION AS SHOWN ON DWG E104 & E204.

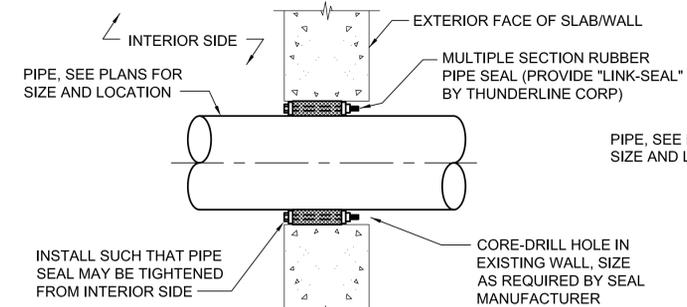


**LEE CREEK PAVEMENT REPLACEMENT DETAIL
NOT TO SCALE**

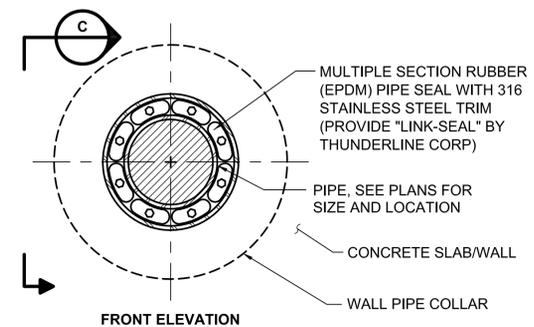
- NOTES:**
1. ASPHALT SHALL BE SLOPED 1/4-INCH PER FOOT AWAY FROM THE DRIVE CENTERLINE.
 2. RECOMPACT EXISTING AGGREGATE DRIVEWAY AND ADD ADDITIONAL AGGREGATE AS REQUIRED.
 3. AGGREGATE BASE COURSE SHALL CONSIST OF MATERIALS CONFORMING TO CITY OF FORT SMITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION STD SPECIFICATIONS SECTION 305.
 4. ASPHALTIC CONCRETE MIXTURES SHALL CONSIST OF MATERIALS CONFORMING TO CITY OF FORT SMITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION STD SPECIFICATIONS SECTION 310.



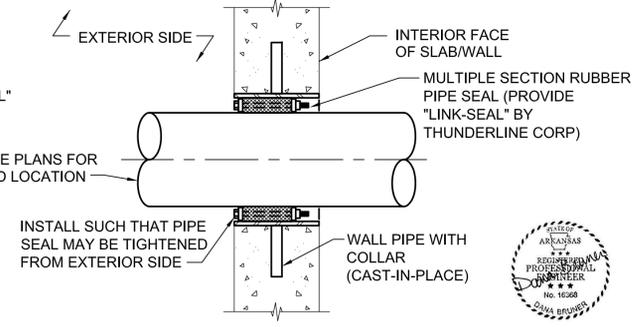
FRONT ELEVATION



**VAULT WALL PENETRATION DETAIL
NOT TO SCALE**



FRONT ELEVATION



**WALL / FLOOR PENETRATION DETAILS
NOT TO SCALE**

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

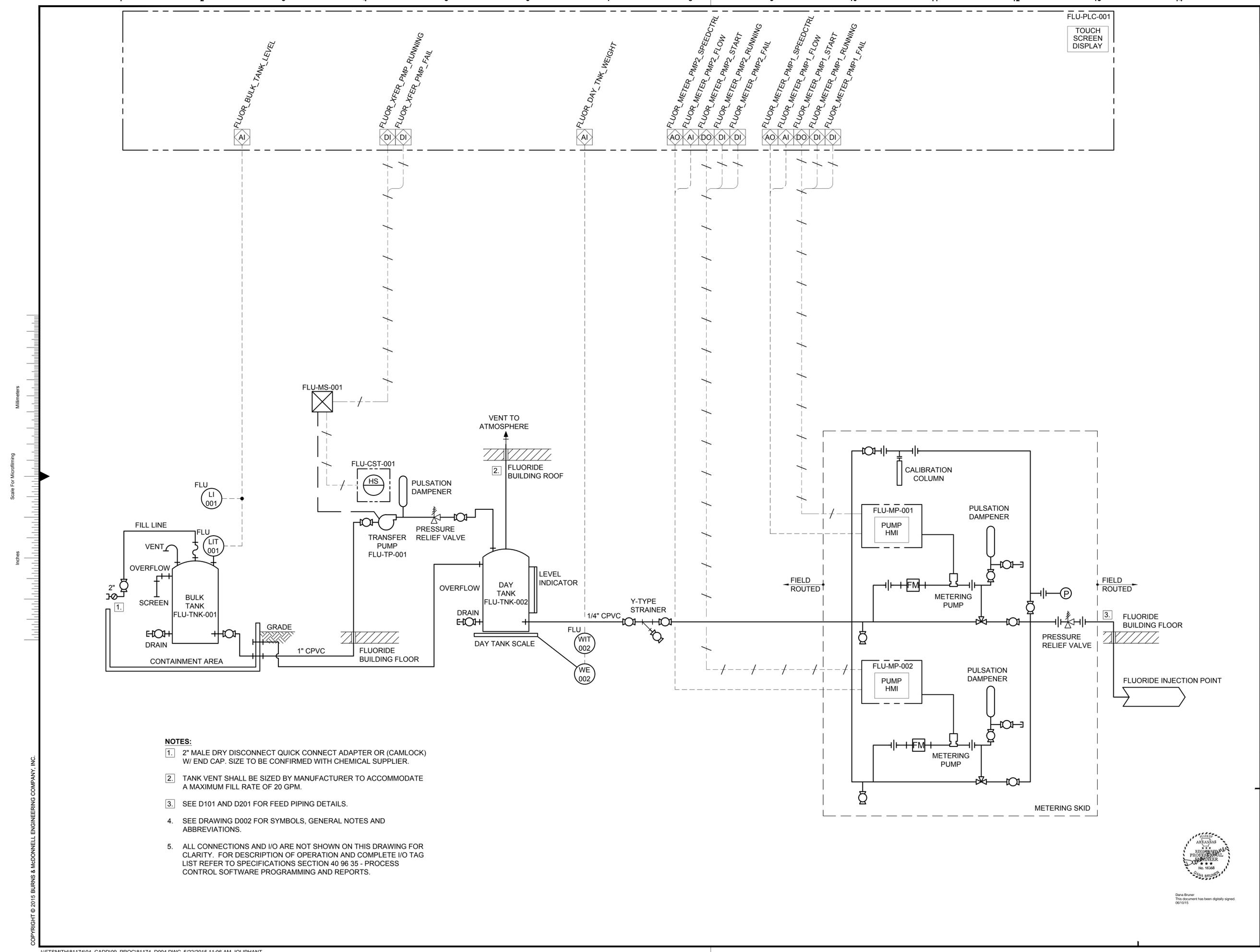
date	detailed
NOVEMBER, 2014	J. OLIPHANT
designed	checked
J. BORRIES	M. O'CONNELL

The City of
Fort Smith
ARKANSAS
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

**FLUORIDE FEED SYSTEMS
PROCESS
MISCELLANEOUS DETAILS**

project	contract
81174	
drawing	rev.
D003	0
sheet	of sheets
file 81174_D003.DWG	

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.



- NOTES:**
- 2" MALE DRY DISCONNECT QUICK CONNECT ADAPTER OR (CAMLOCK) W/ END CAP. SIZE TO BE CONFIRMED WITH CHEMICAL SUPPLIER.
 - TANK VENT SHALL BE SIZED BY MANUFACTURER TO ACCOMMODATE A MAXIMUM FILL RATE OF 20 GPM.
 - SEE D101 AND D201 FOR FEED PIPING DETAILS.
 - SEE DRAWING D002 FOR SYMBOLS, GENERAL NOTES AND ABBREVIATIONS.
 - ALL CONNECTIONS AND I/O ARE NOT SHOWN ON THIS DRAWING FOR CLARITY. FOR DESCRIPTION OF OPERATION AND COMPLETE I/O TAG LIST REFER TO SPECIFICATIONS SECTION 40 96 35 - PROCESS CONTROL SOFTWARE PROGRAMMING AND REPORTS.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	detailed
NOVEMBER, 2014	J. OLIPHANT
designed	checked
C. COLLINS	M. O'CONNELL



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
PROCESS &
INSTRUMENTATIONS
DIAGRAM

project	contract	
81174		
drawing	rev.	
D004	0	
sheet	of	sheets
file 81174_D004.DWG		

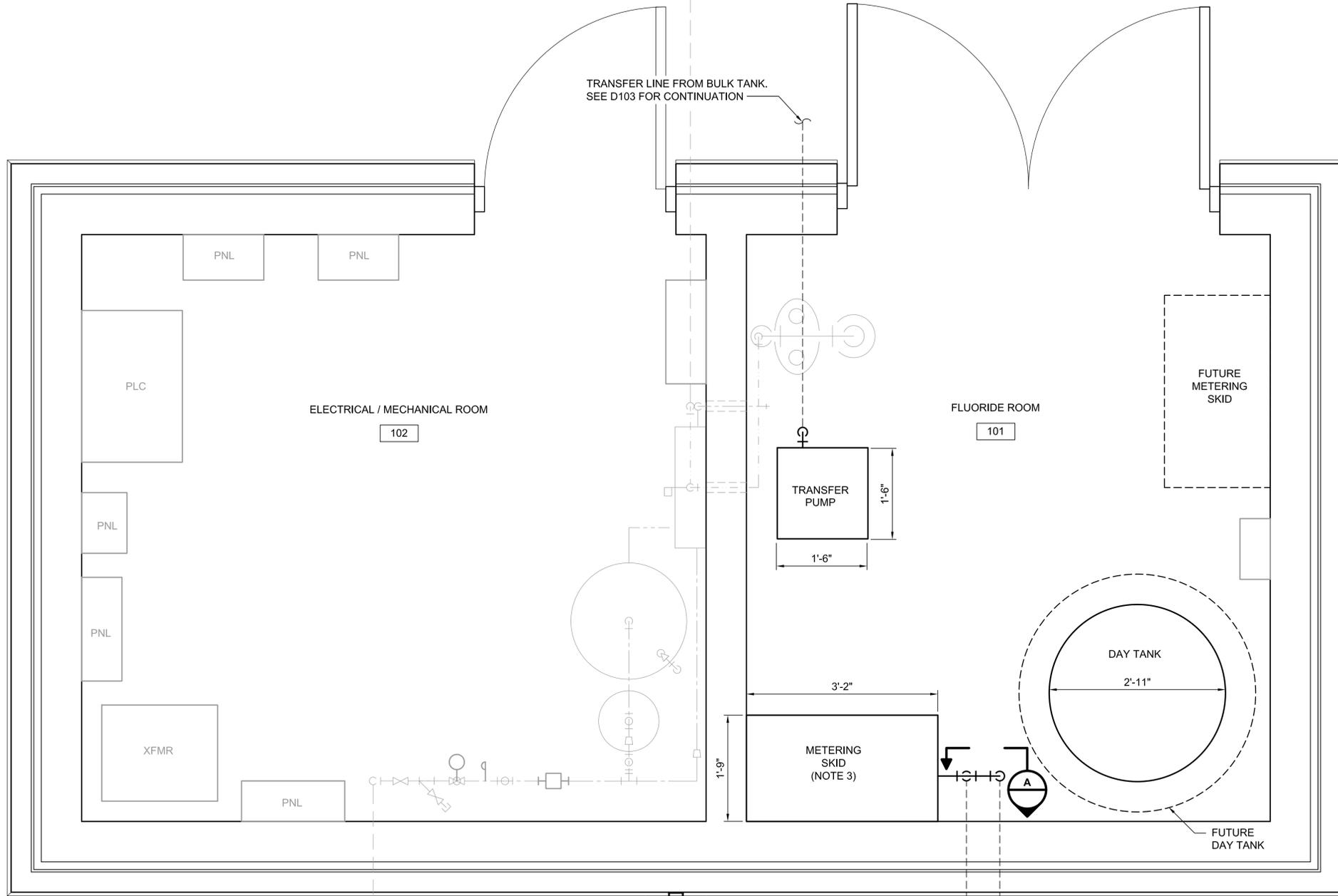
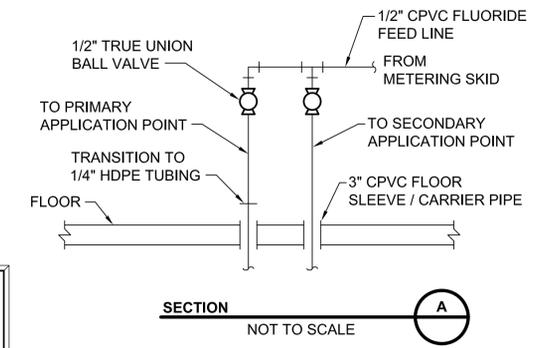


Dana Bruner
This document has been digitally signed.
06/15/15

Scale For Microfitting
Millimeters
Inches
COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

1 2 3 4 5 6 7 8 9 10 11 12 13 14

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



- NOTES:**
1. PIPING TO BE FIELD ROUTED WITH VALVES AND ACCESSORIES AS SHOWN ON D004 AND D103.
 2. DIMENSIONS ARE APPROXIMATE AND LAYOUT SHALL BE CONFIRMED BASED ON APPROVED EQUIPMENT SELECTIONS.
 3. METERING SKID SHALL BE WALL MOUNTED AT APPROXIMATELY 36" TO 42" ABOVE THE FINISHED FLOOR ELEVATION. MOUNTING ELEVATION TO BE CONFIRMED PRIOR TO INSTALLATION.



LAKE FORT SMITH FLUORIDE BUILDING PLAN
 0 1/2" 1" 2"
 SCALE IN FEET



**BURNS
 McDONNELL**
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	NOVEMBER, 2014	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL



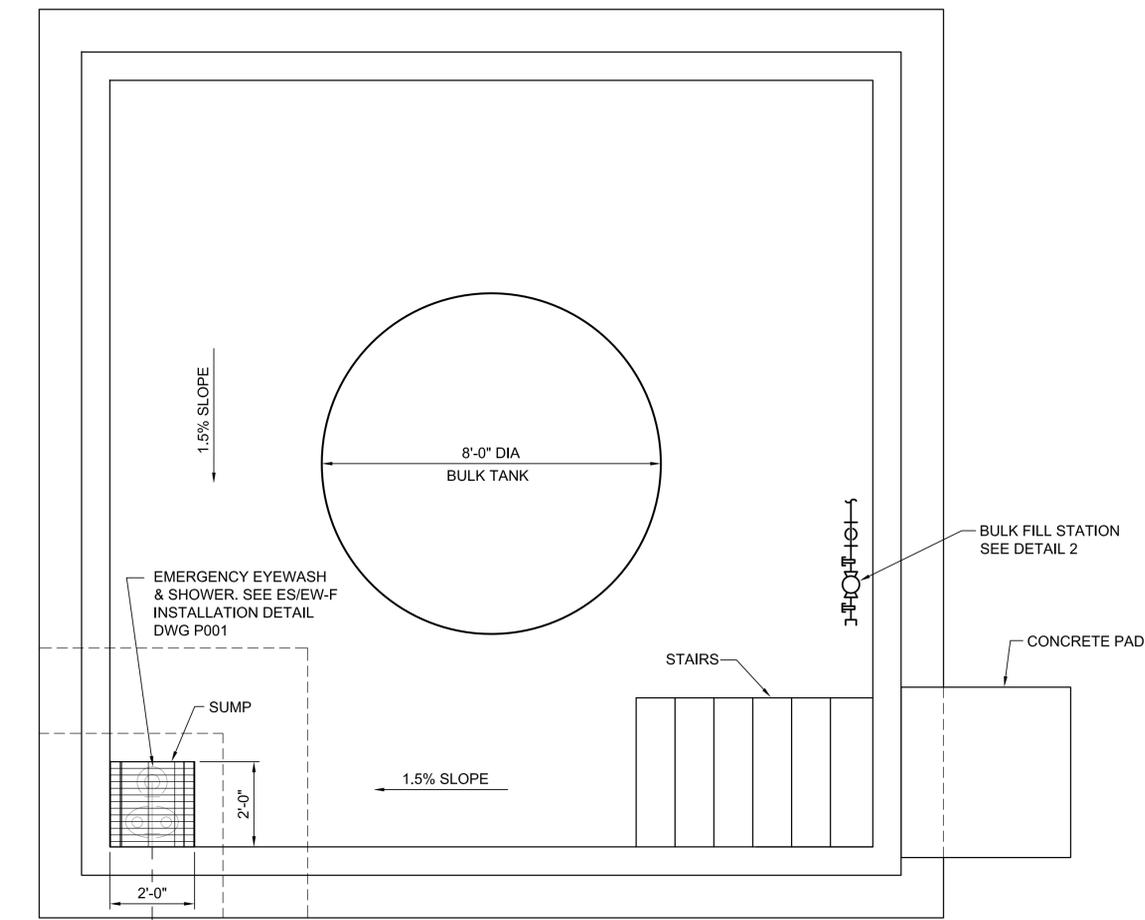
FLUORIDE FEED SYSTEMS
 LAKE FORT SMITH
 FLUORIDE BUILDING LAYOUT

project	81174	contract	
drawing	D101	rev.	0
sheet	of	sheets	
file	81174_D101.DWG		

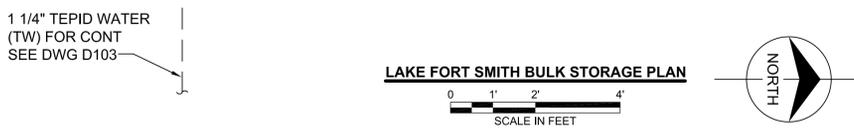
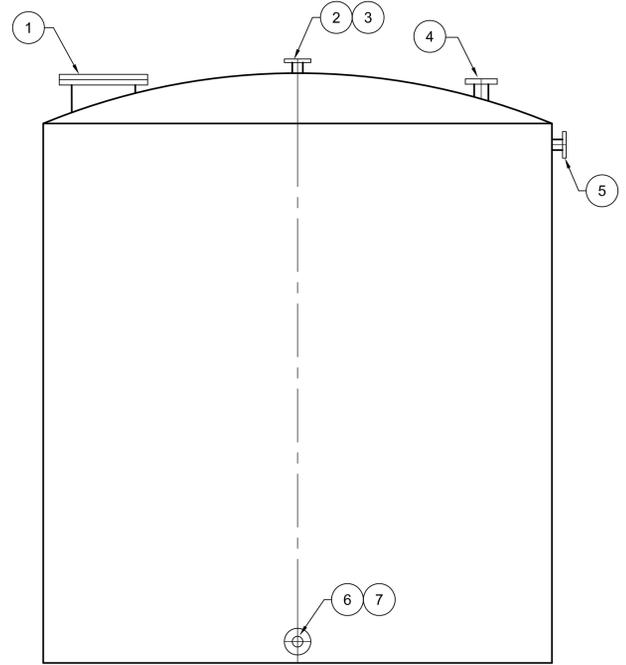
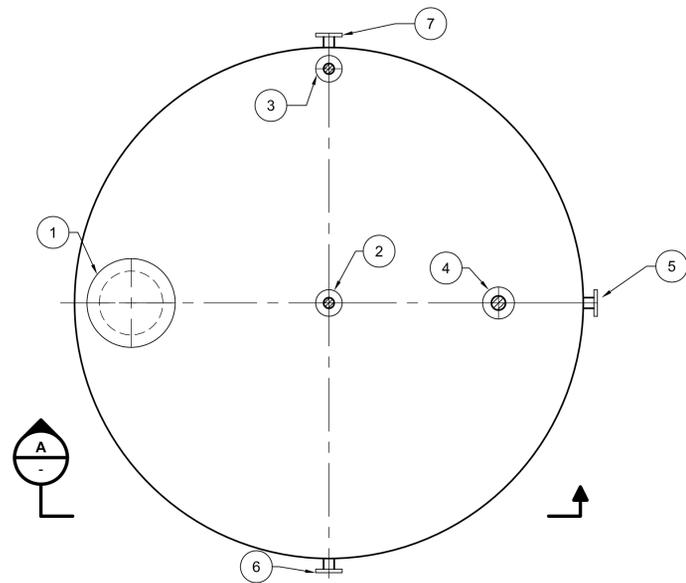


Dana Bruner
 This document has been digitally signed.
 06/10/15

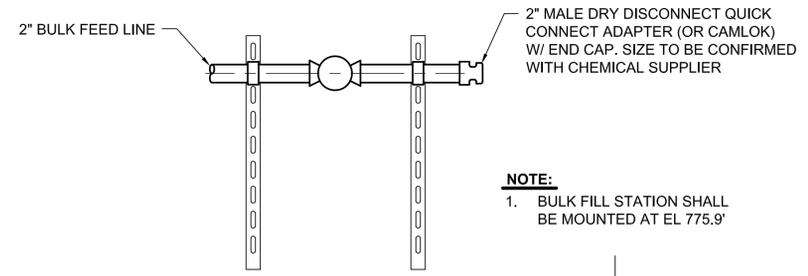
COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.



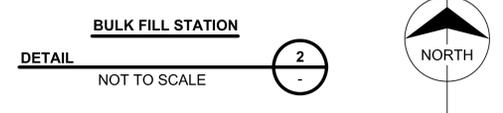
- FITTING DESCRIPTIONS**
- 1 18" MANWAY
 - 2 150 # FF FLANGED VENT
 - 3 2" 150 # FF FLANGED FEED LINE
 - 4 6" 150# FF FLANGED ULTRASONIC LEVEL TRANSMITTER
 - 5 3" 150# FF FLANGED OVERFLOW
 - 6 2" 150 # FF FLANGED TRANSFER LINE
 - 7 3" 150 # FF FLANGED DRAIN



NOTE:
1. PIPING AND VALVING WITHIN TANK AREA TO BE FIELD ROUTED.



NOTE:
1. BULK FILL STATION SHALL BE MOUNTED AT EL 775.9'



no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

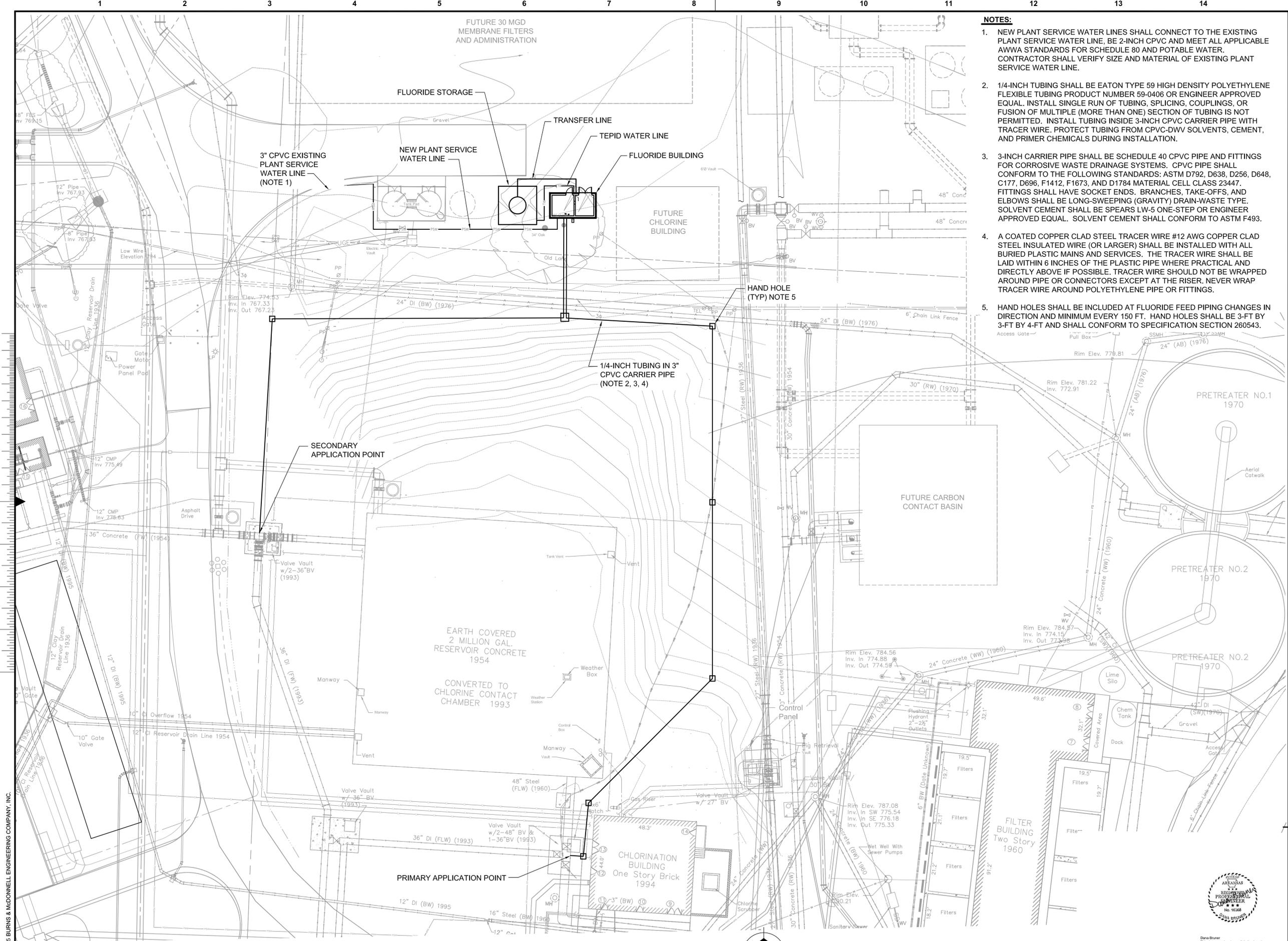
date	NOVEMBER, 2014	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL



FLUORIDE FEED SYSTEMS
LAKE FORT SMITH
BULK STORAGE LAYOUT

project	81174	contract	
drawing	D102	rev.	0
sheet	of	sheets	
file	81174_D102.DWG		

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.



- NOTES:**
- NEW PLANT SERVICE WATER LINES SHALL CONNECT TO THE EXISTING PLANT SERVICE WATER LINE, BE 2-INCH CPVC AND MEET ALL APPLICABLE AWWA STANDARDS FOR SCHEDULE 80 AND POTABLE WATER. CONTRACTOR SHALL VERIFY SIZE AND MATERIAL OF EXISTING PLANT SERVICE WATER LINE.
 - 1/4-INCH TUBING SHALL BE EATON TYPE 59 HIGH DENSITY POLYETHYLENE FLEXIBLE TUBING PRODUCT NUMBER 59-0406 OR ENGINEER APPROVED EQUAL. INSTALL SINGLE RUN OF TUBING, SPLICING, COUPLINGS, OR FUSION OF MULTIPLE (MORE THAN ONE) SECTION OF TUBING IS NOT PERMITTED. INSTALL TUBING INSIDE 3-INCH CPVC CARRIER PIPE WITH TRACER WIRE. PROTECT TUBING FROM CPVC-DWV SOLVENTS, CEMENT, AND PRIMER CHEMICALS DURING INSTALLATION.
 - 3-INCH CARRIER PIPE SHALL BE SCHEDULE 40 CPVC PIPE AND FITTINGS FOR CORROSIVE WASTE DRAINAGE SYSTEMS. CPVC PIPE SHALL CONFORM TO THE FOLLOWING STANDARDS: ASTM D792, D638, D256, D648, C177, D696, F1412, F1673, AND D1784 MATERIAL CELL CLASS 23447. FITTINGS SHALL HAVE SOCKET ENDS. BRANCHES, TAKE-OFFS, AND ELBOWS SHALL BE LONG-SWEEPING (GRAVITY) DRAIN-WASTE TYPE. SOLVENT CEMENT SHALL BE SPEARS LW-5 ONE-STEP OR ENGINEER APPROVED EQUAL. SOLVENT CEMENT SHALL CONFORM TO ASTM F493.
 - A COATED COPPER CLAD STEEL TRACER WIRE #12 AWG COPPER CLAD STEEL INSULATED WIRE (OR LARGER) SHALL BE INSTALLED WITH ALL BURIED PLASTIC MAINS AND SERVICES. THE TRACER WIRE SHALL BE LAID WITHIN 6 INCHES OF THE PLASTIC PIPE WHERE PRACTICAL AND DIRECTLY ABOVE IF POSSIBLE. TRACER WIRE SHOULD NOT BE WRAPPED AROUND PIPE OR CONNECTORS EXCEPT AT THE RISER. NEVER WRAP TRACER WIRE AROUND POLYETHYLENE PIPE OR FITTINGS.
 - HAND HOLES SHALL BE INCLUDED AT FLUORIDE FEED PIPING CHANGES IN DIRECTION AND MINIMUM EVERY 150 FT. HAND HOLES SHALL BE 3-FT BY 3-FT BY 4-FT AND SHALL CONFORM TO SPECIFICATION SECTION 260543.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

Scale For Microfitting
Millimeters

Inches

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

LAKE FORT SMITH FLUORIDE SITE PLAN
0 10' 20' 40'
SCALE IN FEET



BURNS & MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY 29, 2015	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

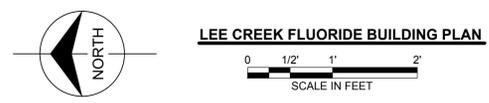
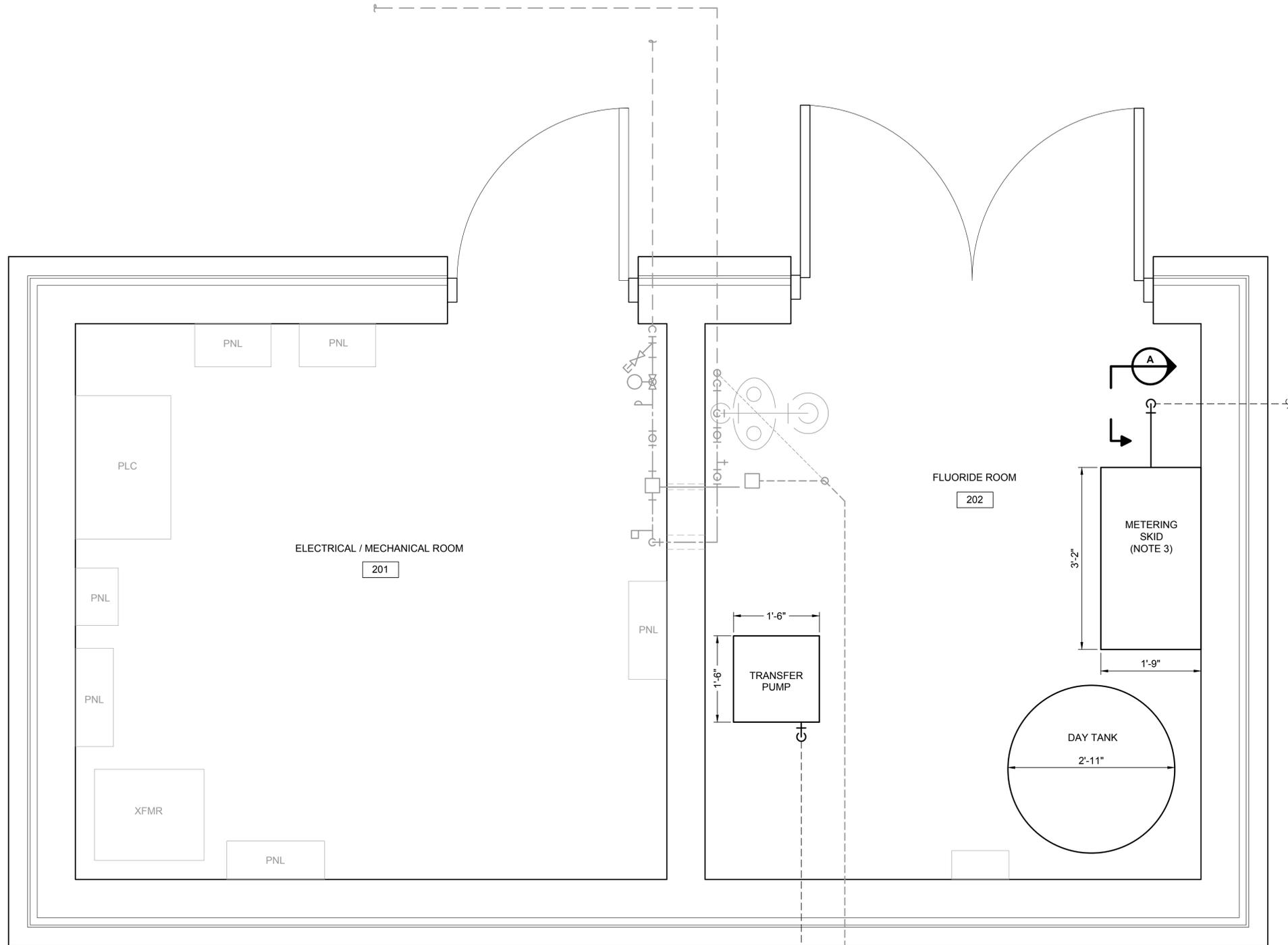
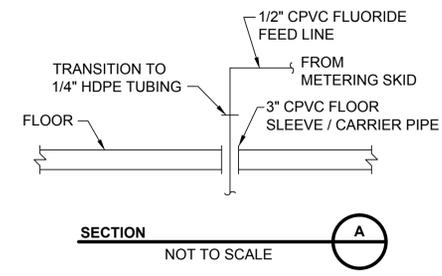
FLUORIDE FEED SYSTEMS
LAKE FORT SMITH
FLUORIDE SITE LAYOUT

project	81174	contract	
drawing	D103	rev.	0
sheet	of	sheets	
file	81174_D103.DWG		



Dana Bruner
This document has been digitally signed.
06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



LEE CREEK FLUORIDE BUILDING PLAN

TRANSFER LINE FROM BULK TANK. SEE D103 FOR CONTINUATION

- NOTES:**
1. PIPING TO BE FIELD ROUTED WITH VALVES AND ACCESSORIES AS SHOWN ON D004 AND D203.
 2. DIMENSIONS ARE APPROXIMATE AND LAYOUT SHALL BE CONFIRMED BASED ON APPROVED EQUIPMENT SELECTIONS.
 3. METERING SKID SHALL BE WALL MOUNTED AT APPROXIMATELY 36" TO 42" ABOVE THE FINISHED FLOOR ELEVATION. MOUNTING ELEVATION TO BE CONFIRMED PRIOR TO INSTALLATION.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	NOVEMBER, 2014	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL

The City of Fort Smith, ARKANSAS
LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK
FLUORIDE BUILDING LAYOUT

project	81174	contract	
drawing	D201	rev.	0
sheet	of	sheets	
file	81174_D201.DWG		

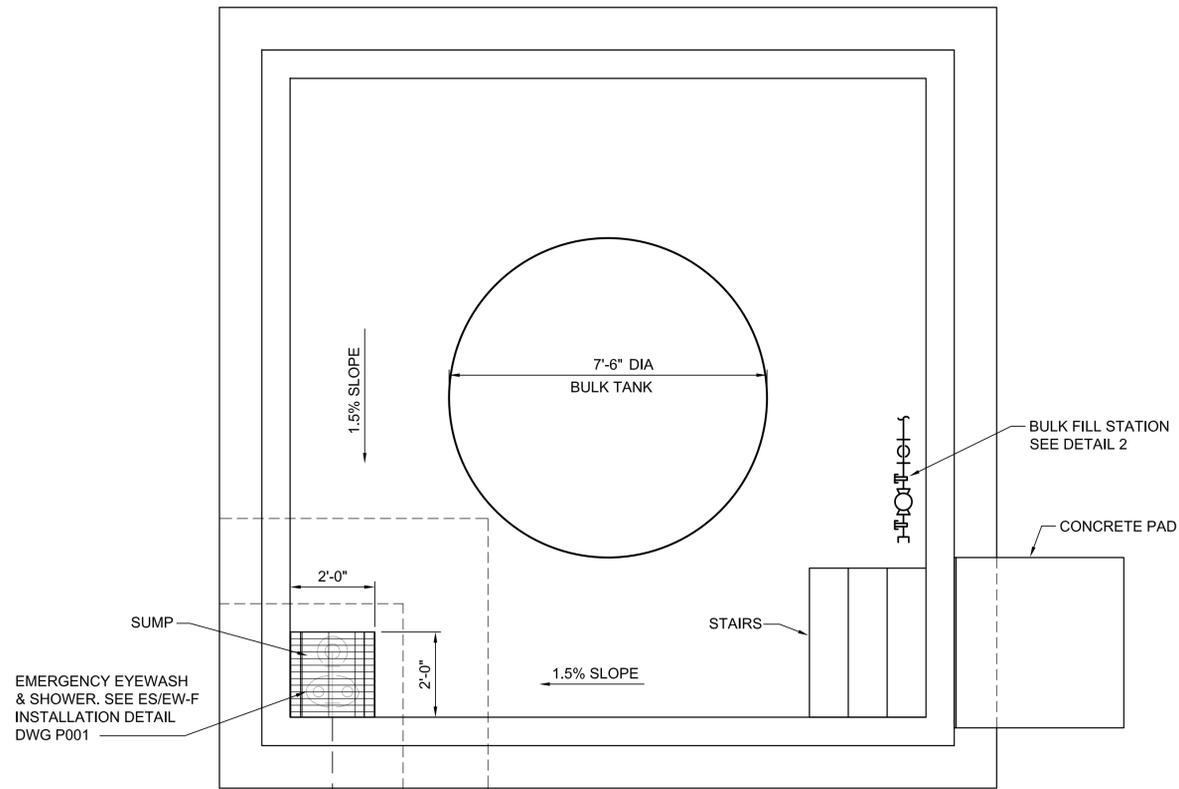


Daria Bruner
This document has been digitally signed.
06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

FITTING DESCRIPTIONS

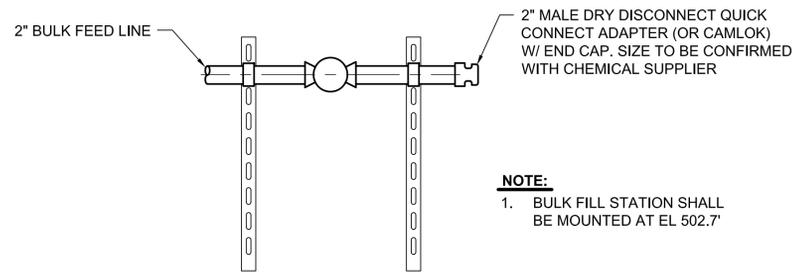
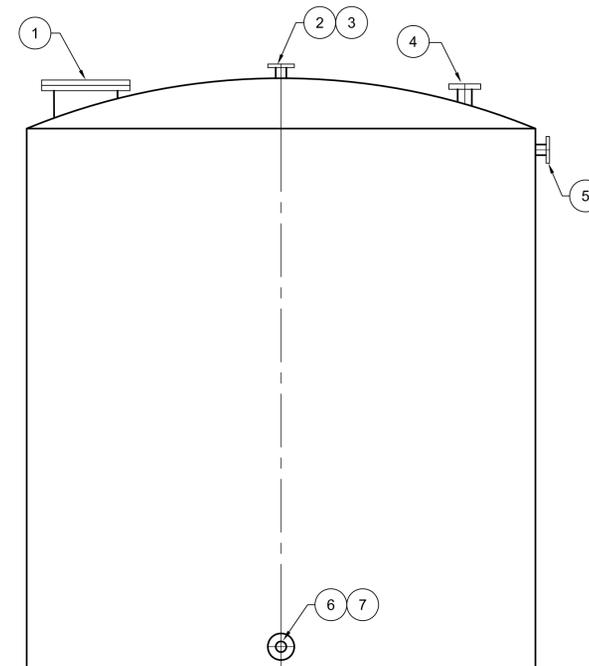
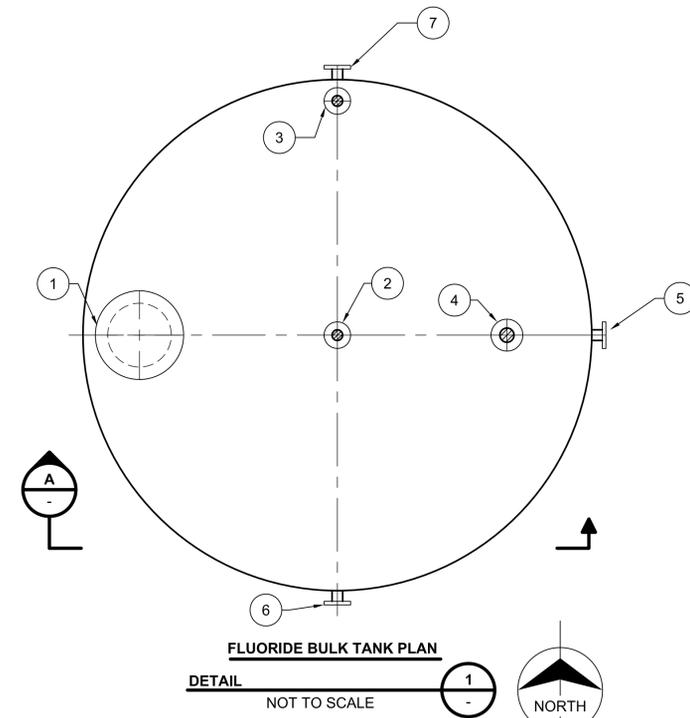
- 1 18" MANWAY
- 2 150 # FF FLANGED VENT
- 3 2" 150 # FF FLANGED FEED LINE
- 4 6" 150# FF FLANGED ULTRASONIC LEVEL TRANSMITTER
- 5 3" 150# FF FLANGED OVERFLOW
- 6 2" 150 # FF FLANGED TRANSFER LINE
- 7 3" 150 # FF FLANGED DRAIN



LEE CREEK BULK STORAGE PLAN



NOTE:
1. PIPING AND VALVING WITHIN TANK AREA TO BE FIELD ROUTED.



NOTE:
1. BULK FILL STATION SHALL BE MOUNTED AT EL 502.7"

BULK FILL STATION



BURNS & McDONNELL

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	NOVEMBER, 2014	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL



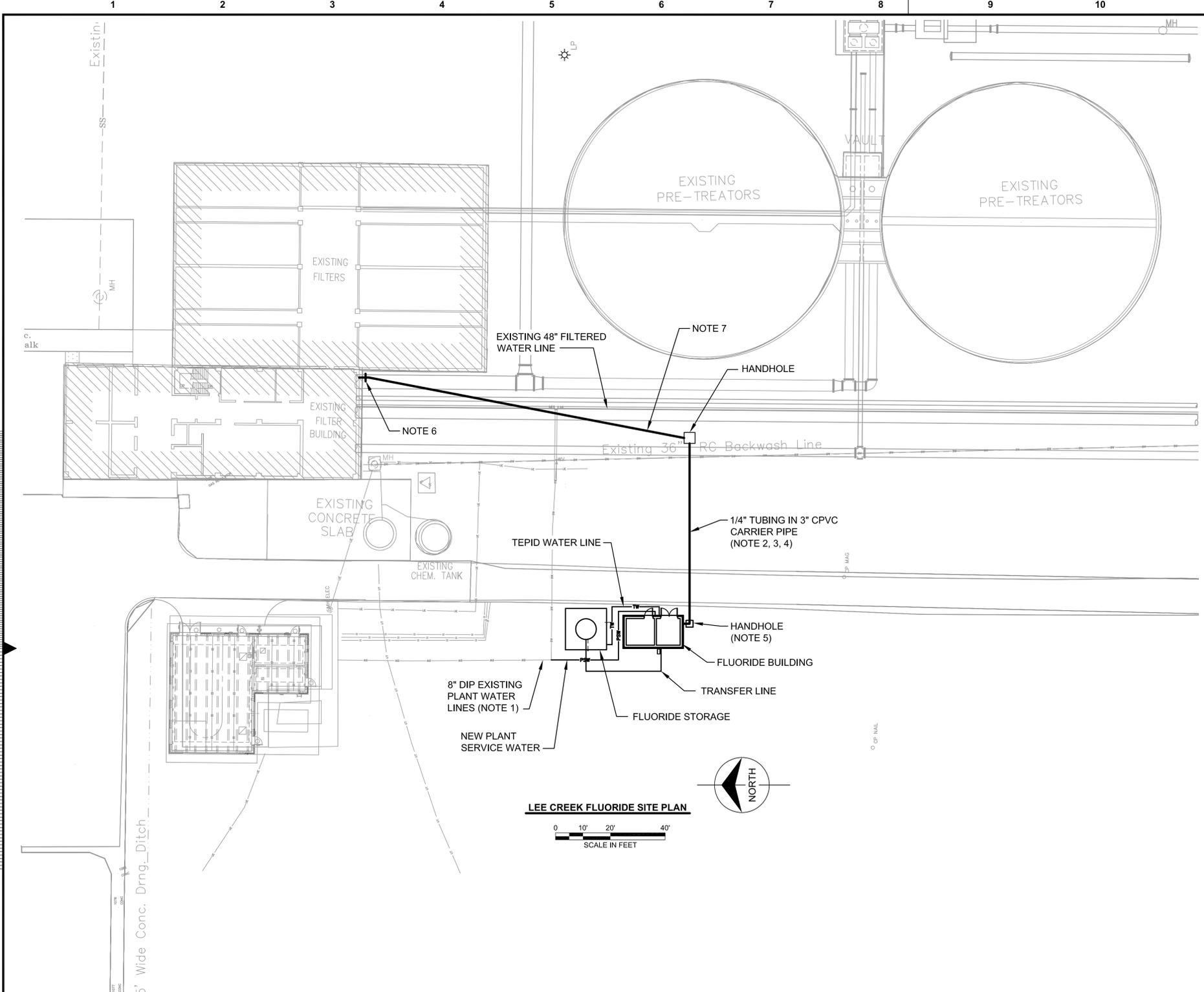
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK
BULK STORAGE LAYOUT

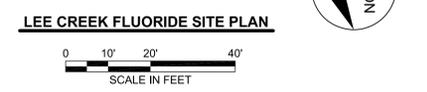
project	81174	contract	
drawing	D202	rev.	0
sheet	of	sheets	
file	81174_D202.DWG		



Dana Bruner
This document has been digitally signed.
06/09/15



- NOTES:**
1. NEW PLANT SERVICE WATER LINES SHALL CONNECT TO THE EXISTING PLANT SERVICE WATER LINE, BE 2-INCH CPVC AND MEET ALL APPLICABLE AWWA STANDARDS FOR SCHEDULE 80 AND POTABLE WATER. CONTRACTOR SHALL VERIFY SIZE AND MATERIAL OF EXISTING PLANT SERVICE WATER LINE.
 2. 1/4-INCH TUBING SHALL BE EATON TYPE 59 HIGH DENSITY POLYETHYLENE FLEXIBLE TUBING PRODUCT NUMBER 59-0406 OR ENGINEER APPROVED EQUAL. INSTALL SINGLE RUN OF TUBING, SPLICING, COUPLINGS, OR FUSION OF MULTIPLE (MORE THAN ONE) SECTION OF TUBING IS NOT PERMITTED. INSTALL TUBING INSIDE 3-INCH CPVC CARRIER PIPE WITH TRACER WIRE. PROTECT TUBING FROM CPVC SOLVENTS, CEMENT, AND PRIMER CHEMICALS DURING INSTALLATION.
 3. 3-INCH CARRIER PIPE SHALL BE SCHEDULE 40 CPVC PIPE AND FITTINGS FOR CORROSIVE WASTE DRAINAGE SYSTEMS. CPVC PIPE SHALL CONFORM TO THE FOLLOWING STANDARDS: ASTM D792, D638, D256, D648, C177, D696, F1412, F1673, AND D1784 MATERIAL CELL CLASS 23447. FITTINGS SHALL HAVE SOCKET ENDS. BRANCHES, TAKE-OFFS, AND ELBOWS SHALL BE LONG-SWEEPING (GRAVITY) DRAIN-WASTE TYPE. SOLVENT CEMENT SHALL BE SPEARS LW-5 ONE-STEP OR ENGINEER APPROVED EQUAL. SOLVENT CEMENT SHALL CONFORM TO ASTM F493.
 4. A COATED COPPER CLAD STEEL TRACER WIRE #12 AWG COPPER CLAD STEEL INSULATED WIRE (OR LARGER) SHALL BE INSTALLED WITH ALL BURIED PLASTIC MAINS AND SERVICES. THE TRACER WIRE SHALL BE LAID WITHIN 6 INCHES OF THE PLASTIC PIPE WHERE PRACTICAL AND DIRECTLY ABOVE IF POSSIBLE. TRACER WIRE SHOULD NOT BE WRAPPED AROUND PIPE OR CONNECTORS EXCEPT AT THE RISER. NEVER WRAP TRACER WIRE AROUND POLYETHYLENE PIPE OR FITTINGS.
 5. HAND HOLES SHALL BE INCLUDED AT FLUORIDE FEED PIPING CHANGES IN DIRECTION AND MINIMUM EVERY 150 FT. HAND HOLES SHALL BE 3-FT BY 3-FT BY 4-FT AND SHALL CONFORM TO SPECIFICATION SECTION 260543.
 6. SEE D204 FOR CONTINUATION.
 7. MULTIPLE SMALL DIAMETER CHEMICAL FEED LINES, ELECTRICAL CONDUIT AND VARIOUS UTILITIES IN THE PIPING CORRIDOR. CONTRACTOR TO CAREFULLY HAND-DIG ALIGNMENT OF FLUORIDE PIPING TO LOCATE, IDENTIFY AND PROTECT UTILITIES.



Millimeters
Scale For Microminim
Inches

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	J. OLIPHANT
designed	C. COLLINS	checked	M. O'CONNELL



FLUORIDE FEED SYSTEMS
LEE CREEK
FLUORIDE SITE LAYOUT

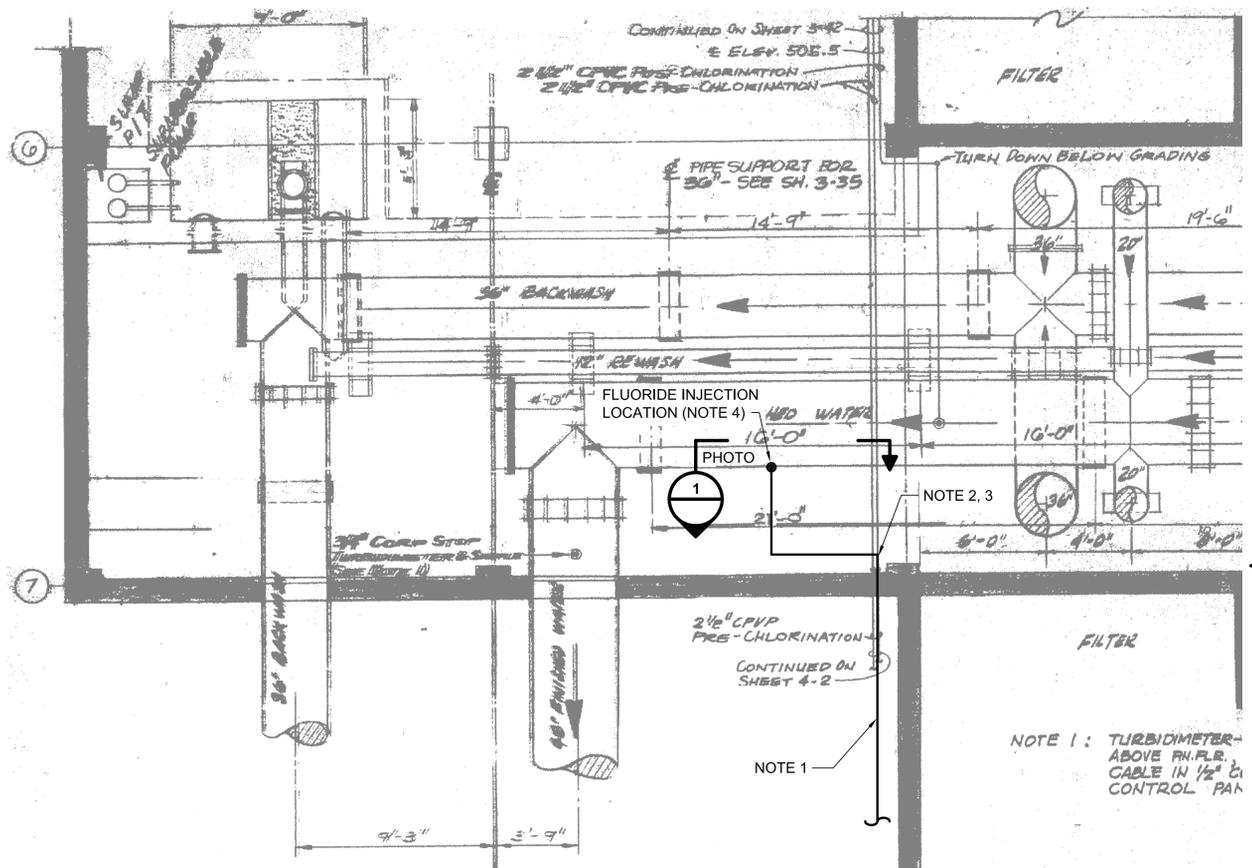
project	81174	contract	
drawing	D203	rev.	0
sheet	of	sheets	
file	81174_D203.DWG		

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

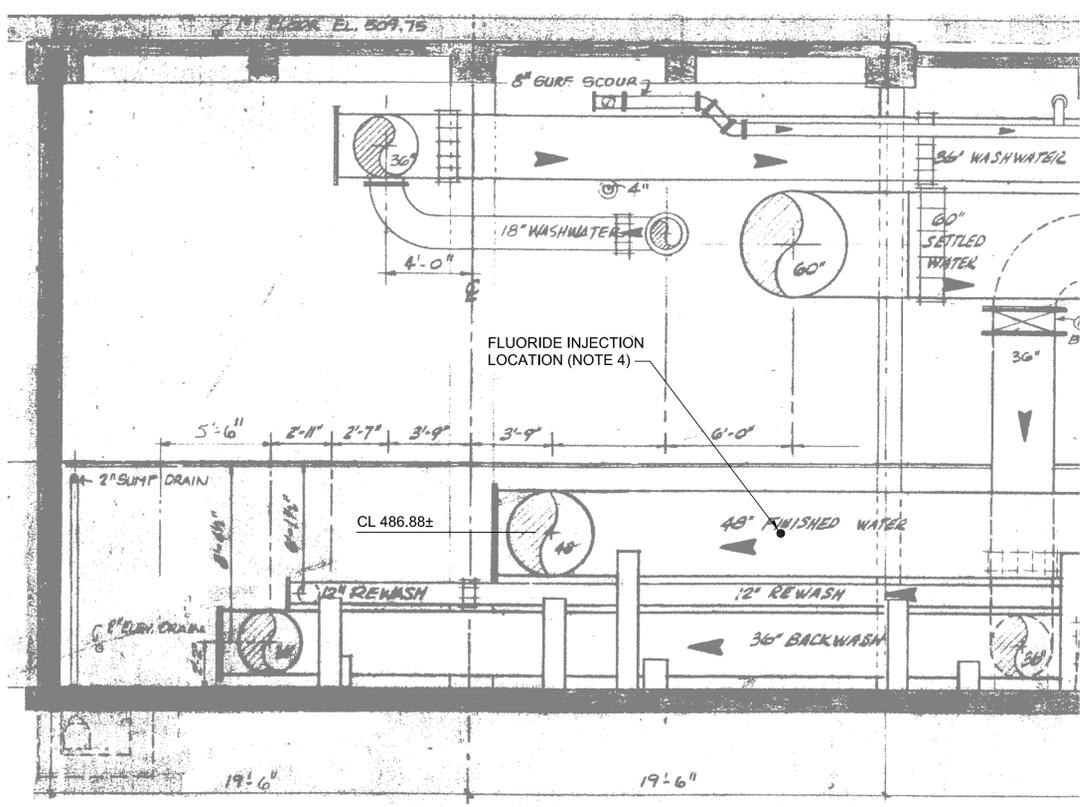


Dana Bruner
This document has been digitally signed.
06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**LAKE FORT SMITH EXISTING VALVE
PRIMARY APPLICATION POINT**
NOT TO SCALE



SECTION A
NOT TO SCALE

- NOTES:**
- EXISTING 2 1/2-INCH CPVC CHLORINE LINES ABANDONED IN PLACE. CONTRACTOR TO DEMOLISH AS NECESSARY TO CONNECT 3-INCH CPVC CARRIER PIPE TO EXISTING 2 1/2-INCH CPVC PIPE IN YARD.
 - CONTRACTOR TO CUT 2 1/2-INCH CPVC LINE APPROXIMATELY 3-INCHES FROM BUILDING WALL AND DEMOLISH EXISTING ABANDONED 2 1/2-INCH CPVC CHLORINE LINES WITHIN BUILDING AS NECESSARY.
 - TRANSITION FROM 1/4-INCH TUBING TO 1 1/2-INCH SCHEDULE 80 CPVC PIPING TO INJECTION LOCATION.
 - SEE SOLUTION DIFFUSER DETAIL ON D003. INJECTION POINT TO BE LOCATED IN THE LOWER ONE THIRD OF THE PIPE.



PHOTO 1
NOT TO SCALE



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	MAY, 2015	detailed	R. BENNETT
designed	D. BRUNER	checked	M. O'CONNELL

The City of
Fort Smith
ARKANSAS
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK
FLUORIDE INJECTION DETAILS

project	81174	contract	
drawing	D204	rev.	0
sheet	of	sheets	
file	81174_D204.DWG		



Dana Bruner
This document has been digitally signed.
06/10/15

Scale For Microminim
Millimeters
Inches

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

PIPING	
	GATE VALVE
	GLOBE VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	STOP CHECK VALVE
	AUTOMATIC RECIRCULATION CHECK VALVE
	PLUG VALVE
	3-WAY PLUG VALVE (2-PORT)
	3-WAY PLUG VALVE (3-PORT)
	4-WAY PLUG VALVE (4-PORT)
	3-WAY VALVE
	ANGLE VALVE
	RELIEF OR SAFETY VALVE
	HOSE GATE DRAIN VALVE
	PINCH VALVE
	NEEDLE VALVE
	DIAPHRAGM VALVE
	BALL VALVE
	SELF-CONTAINED PRESSURE REDUCING (REGULATING VALVE)
	SOLENOID VALVE
	KNIFE GATE VALVE
	CORPORATION STOP
	AIR RELEASE VALVE
	VACUUM VALVE
	AIR AND VACUUM VALVE
	LOCKED OPEN
	LOCKED CLOSED

EQUIPMENT TAG	
	EQUIPMENT ABBREVIATION
	EQUIPMENT NUMBER
	BUILDING/SYSTEM DESIGNATION
BUILDING/SYSTEM	
FLU	LEE CREEK AND LAKE FORT SMITH FLUORIDE IMPROVEMENTS

VALVE OPERATORS	
	CYLINDER
	DIAPHRAGM
	MOTOR
	SOLENOID
	DIAPHRAGM WITH HANDWHEEL
	CHAINWHEEL
	FLOAT

HEATING, VENTILATION AND AIR CONDITIONING	
	COOLING COIL
	HEATING COIL
	LINED DUCTWORK (L1) = 1" INSULATION (L2) = 2" INSULATION
	DAMPER
	FLEXIBLE DUCT CONNECTION
	RECTANGULAR ELBOW WITH TURNING VANES (INDICATES TURNING VANES)
	TEE W/TURNING VANES
	ADJUSTABLE EXTRACTING DEVICE
	ADJUSTABLE SPLITTER DAMPER
	RISE IN RESPECT TO AIR FLOW
	DROP IN RESPECT TO AIR FLOW
	SPLITTER DAMPER (ADJUSTABLE)
	SQUARE OR RECTANGULAR TO ROUND TRANSITION
	SUPPLY OR OUTSIDE AIR DUCT SECTION
	RETURN OR EXHAUST AIR DUCT SECTION
	CEILING DIFFUSER (W/BLANK OFF PLATE INDICATED)
	SIDEWALL (RA OR EA) REGISTER OR GRILLE
	SIDEWALL (SA) REGISTER OR GRILLE
	FINNED TUBE RADIATION (LENGTH OF ELEMENT SHOWN)
	SQUARE OR RECTANGULAR DIFFUSER
	ROUND DIFFUSER
	LINEAR OR SLOT DIFFUSER
	ROUND FLEXIBLE DUCT

PIPING AND PLUMBING ABBREVIATIONS	
AFF	ABOVE FINISHED FLOOR
BD	BLOWDOWN
BP	BACKFLOW PREVENTER
CA	COMPRESSED AIR
CIP	CAST-IRON-PIPE
CL	CHLORINE LIQUID
CNPW	CLEAN NON-POTABLE WATER
CO	CLEANOUT
CPVC	CHLORINATED POLYVINYL CHLORIDE
CW	CITY WATER OR (POTABLE) COLD WATER
D	DRAIN
DIP	DUCTILE IRON PIPE
DWV	DRAIN-WASTE-VENT
ET	EXPANSION TANK
EWH	ELECTRIC WATER HEATER
FCO	FLOOR CLEANOUT
FM	FORCED MAIN
FRP	FIBERGLASS
HB	HOSE BIBB
HW	HOT WATER
HTWR	HIGH TEMP WATER RETURN
HTWS	HIGH TEMP WATER SUPPLY
LS	LAB SINK
LSS	LAB SAMPLE SINK
MV	THERMOSTATIC MIXING VALVE
NPHW	NON-POTABLE HOT WATER
NPW	NON-POTABLE WATER
NSF	NATIONAL SANITATION FOUNDATION
PSW	PLANT SERVICE WATER
PVC	POLYVINYL CHLORIDE (PLASTIC)
R	RELIEF LINE
RO	REVERSE-OSMOSIS
RS	REFRIGERANT SUCTION
S	SANITARY SEWER
SD	SAMPLE SINK DRAIN
SMP	SAMPLE PUMP
SP	SUMP PUMP
SST	STAINLESS STEEL
TW	TEPID WATER
U.N.O.	UNLESS NOTED OTHERWISE
VTR	VENT THRU ROOF
WCO	WALL CLEANOUT
WH	WALL HYDRANT (FREEZEPROOF)
YCO	YARD CLEANOUT
YH	YARD HYDRANT

AIR DISTRIBUTION DEVICE IDENTIFICATION	
	CFM NECK OR DEVICE SIZE
	SA-1
	SPEC TYPE APPLICATION

HVAC ABBREVIATIONS	
24x12	RECTANGULAR DUCT DIMENSION (1ST FIGURE IS SIDE SHOWN)
120	ROUND DUCT DIMENSION
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
BDD	BACKDRAFT DAMPER
BOD	BOTTOM OF DUCT
CD	CONTROL DAMPER
CH	CABINET HEATER
CONN	CONNECTION
CU	CONDENSING UNIT
DEH	DEHUMIDIFIER
DF	DUCT FAN
DN	DOWN
DPS	DIFFERENTIAL PRESSURE SWITCH
EA	EXHAUST AIR
ECH	ELECTRIC CABINET HEATER
ECP	EQUIPMENT CONTROL PANEL
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EGS	EMERGENCY GAS SCRUBBER
EHC	ELECTRIC HEATING COIL
ER	EXHAUST REGISTER
EUH	ELECTRIC UNIT HEATER
EWH	ELECTRIC WALL HEATER
EVS	EMERGENCY VENTILATION SWITCH
F	FAN
FCU	FAN COIL UNIT
FRP	FIBERGLASS REINFORCED PIPE
FUR	FURNACE
H	HUMIDISTAT
HP	HEAT PUMP
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
L	LOUVER
(L1)	LINED WITH 1 INCH INSULATION
(L2)	LINED WITH 2 INCHES INSULATION
MAU	MAKE-UP AIR UNIT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OB	OPPOSED BLADE
PAC	PACKAGED AIR CONDITIONER
PB	PARALLEL BLADE
PF	PROPELLER FAN
PHP	PACKAGED HEAT PUMP
PRV	POWER ROOF VENTILATOR
R	REFRIGERANT LINES
RA	RETURN AIR
RG	RETURN GRILLE
RH	ROOF HOOD
RTS	REMOTE TEST STATION
SD	SMOKE DETECTOR
SF	SUPPLY FAN
SR	SUPPLY REGISTER
T	THERMOSTAT
TCP	TEMPERATURE CONTROL PANEL
TOD	TOP OF DUCT
VCD	VOLUME CONTROL DAMPER
(W)	WRAPPED
WAC	WALL MOUNTED AIR CONDITIONER
WF	WALL FAN
WH	WALL HEATER

INSTRUMENTS	
	FLOW METERING ELEMENT
	GG - GAUGE GLASS
	LI - LEVEL INDICATOR
	LC - LEVEL CONTROLLER
	LLS - LIQUID LEVEL SWITCH
	LX - LEVEL TRANSMITTER
	FI - FLOW INDICATOR
	FC - FLOW CONTROLLER
	FS - FLOW SWITCH
	FX - FLOW TRANSMITTER
	T - THERMOMETER
	TC - THERMOCOUPLE
	TCT - TEMPERATURE CONTROLLER
	TS - TEMPERATURE SWITCH
	TX - TEMPERATURE TRANSMITTER
	RTD - RESISTANCE TEMPERATURE DETECTOR
	P - PRESSURE GAUGE
	PC - PRESSURE CONTROLLER
	PS - PRESSURE SWITCH
	PX - PRESSURE TRANSMITTER
	DPG - DIFFERENTIAL PRESSURE GAUGE
	DPC - DIFFERENTIAL PRESSURE CONTROLLER
	PDS - PRESSURE DIFFERENTIAL SWITCH
	DPX - DIFFERENTIAL PRESSURE TRANSMITTER
	TC - TEST CONNECTION
	PT - PRESSURE TAP
	SAMPLE CONNECTION
	CONTROL FUNCTION LINE

PLUMBING	
	SH SHOWER
	WF CIRCULAR WASH FOUNTAIN
	WF SEMI-CIRCULAR WASH FOUNTAIN
	MB MOP BASIN
	SS SERVICE SINK
	EWC ELECTRIC WATER COOLER
	WH WATER HEATER
	WC-A WATER CLOSET (FLUSH VALVE TYPE)
	WC-A WATER CLOSET (TANK TYPE)
	UR URINAL
	L-A LAVATORY, -A (SPEC TYPE)
	EMERGENCY SHOWER AND EYEWASH (-FREEZEPROOF)
	EMERGENCY SHOWER (CEILING MOUNTED)
	4"FD-A SIZE - FLOOR DRAIN - SPEC TYPE
	4"ED-A SIZE - EQUIPMENT DRAIN - SPEC TYPE
	4"FS-A SIZE - FLOOR SINK - SPEC TYPE
	WHA WATER HAMMER ARRESTOR
	TEMPERATURE/PRESSURE RELIEF VALVE
	CITY WATER OR (POTABLE) COLD WATER (CW)
	HOT WATER (HW)
	REVERSE OSMOSIS (RO)
	TEPID WATER (TW)
	SOIL OR WASTE (ABOVE GRADE)
	SOIL OR WASTE (BELOW GRADE)
	VENT (V)
	NON-POTABLE WATER (NPW)
	CLEAN NON-POTABLE WATER (CNPW)
	NON-POTABLE HOT WATER (NPHW)

PLUMBING RISER IDENTIFICATION	
	RISER NUMBER: P = SANITARY WASTE W = WATER CA = COMPRESSED AIR LPG = LIQUID PETROLEUM (PROPANE) GAS ICP = INSTRUMENT CARRIER PIPE
	DRAWING NUMBER WHERE RISER IS DETAILED (LEAVE BLANK IF RISER IS ON THE SAME DRAWING)

NOTE:

- THIS IS A STANDARD MECHANICAL LEGEND AND NOT ALL ITEMS OR EQUIPMENT AS DESIGNATED HEREON ARE USED ON THIS PROJECT.
- ALL DUCTWORK DIMENSIONS SHOWN ON THE DRAWINGS ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.



BURNS & McDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	APRIL, 2015	detailed	W. PYLE
designed	J. BORRIES	checked	A. VAWTER

The City of Fort Smith ARKANSAS
 LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS	
HVAC, PLUMBING AND MECHANICAL LEGEND ABBREVIATIONS AND GENERAL NOTES	
project	contract
81174	
drawing	rev.
ML001	0
sheet	of sheets
file 81174_ML001.DWG	

Scale For Microfilming
 Millimeters
 Inches

FAN SCHEDULE

EQUIP. NUMBER	LOCATION		MFR.	MODEL	FAN TYPE	FAN MOUNTING	CFM @ STD. COND.	ESP (IN W.C.)	APPROX. HP	VOLTS/ PHASE/HZ	DRIVE TYPE	WT (LBS)	REMARKS
	DWG	ROOM											
LAKE FORT SMITH													
FLU-EF-001	M101	FLUORIDE ROOM	GREENHECK	CW-080-VG	CENTRIFUGAL	SIDEWALL	300	0.25	1/6	115/60/1	DIRECT	40	1, 2
FLU-EF-002	M101	ELECTRICAL ROOM	GREENHECK	CW-141-VG	CENTRIFUGAL	SIDEWALL	1600	0.25	1/2	115/60/1	DIRECT	76	1, 2
LEE CREEK													
FLU-EF-003	M201	FLUORIDE ROOM	GREENHECK	CW-080-VG	CENTRIFUGAL	SIDEWALL	300	0.25	1/6	115/60/1	DIRECT	40	1, 2
FLU-EF-004	M201	ELECTRICAL ROOM	GREENHECK	CW-141-VG	CENTRIFUGAL	SIDEWALL	1600	0.25	1/2	115/60/1	DIRECT	76	1, 2

REMARKS:
 1. MANUFACTURER PROVIDED INTEGRAL OVERLOAD PROTECTION AND DISCONNECT SWITCH.
 2. PROVIDE 3-COAT FLUOROPOLYMER FINISH COMPLYING WITH AAMA 2605 AND CONTAINING NOT LESS THAN 70% PVDF RESIN BY WEIGHT IN BOTH COLOR COAT AND CLEAR TOPCOAT.

CONTROL DAMPER (CD) SCHEDULE

EQUIP. NUMBER	LOCATION		MFR.	MODEL	MTL	APPROX. SIZE IN X IN	FAIL OPEN/ CLOSED	REMARKS
	DWG	ROOM						
LAKE FORT SMITH								
FLU-CD-001	M101	FLUORIDE ROOM	RUSKIN	CD-40	ALUMINUM	10 X 10	CLOSED	1, 2
FLU-CD-002	M101	FLUORIDE ROOM	RUSKIN	CD-40	ALUMINUM	16 X 16	CLOSED	1
FLU-CD-003	M101	ELECTRICAL ROOM	RUSKIN	CD-40	ALUMINUM	16 X 16	CLOSED	1
FLU-CD-004	M101	ELECTRICAL ROOM	RUSKIN	CD-40	ALUMINUM	16 X 48	CLOSED	1
LEE CREEK								
FLU-CD-005	M201	FLUORIDE ROOM	RUSKIN	CD-40	ALUMINUM	10 X 10	CLOSED	1, 2
FLU-CD-006	M201	FLUORIDE ROOM	RUSKIN	CD-40	ALUMINUM	16 X 16	CLOSED	1
FLU-CD-007	M201	ELECTRICAL ROOM	RUSKIN	CD-40	ALUMINUM	16 X 16	CLOSED	1
FLU-CD-008	M201	ELECTRICAL ROOM	RUSKIN	CD-40	ALUMINUM	16 X 48	CLOSED	1

REMARKS:
 1. COORDINATE SIZE WITH ACTUAL LOUVER, DUCTWORK, OR EQUIPMENT PROVIDED.
 2. PROVIDE 3-COAT FLUOROPOLYMER FINISH COMPLYING WITH AAMA 2605 AND CONTAINING NOT LESS THAN 70% PVDF RESIN BY WEIGHT IN BOTH COLOR COAT AND CLEAR TOPCOAT.

UNIT HEATER SCHEDULE

EQUIP. NUMBER	LOCATION		MFR.	MODEL	CFM (STD. COND.)	OUTPUT KW (BTUH)	V/PH/HZ	WT (LBS)	REMARKS
	DWG	ROOM							
LAKE FORT SMITH									
FLU-EUH-001	M101	101	INDEECO	TRIAD	700	2 KW	208/1/60	56	1, 2, 3, 4
FLU-EUH-003	M101	102	INDEECO	TRIAD	700	2 KW	208/1/60	56	1, 2, 3, 4
LEE CREEK									
FLU-EUH-002	M201	201	INDEECO	TRIAD	700	2 KW	208/1/60	56	1, 2, 3, 4
FLU-EUH-004	M201	202	INDEECO	TRIAD	700	2 KW	208/1/60	56	1, 2, 3, 4

REMARKS:
 1. MANUFACTURER PROVIDED SWIVEL CEILING MOUNTING BRACKET.
 2. CORROSION RESISTANT.
 3. MANUFACTURER PROVIDED DISCONNECT SWITCH.
 4. MANUFACTURER PROVIDED THERMOSTAT.

THERMOSTAT (T) SCHEDULE

EQUIP. NUMBER	LOCATION		MFR.	MODEL	SET PT (°F)	EQUIP. CONTROLLED	REMARKS
	DWG	RM					
LAKE FORT SMITH							
FLU-T-001	M101	101	HONEYWELL	T631F	85	FLU-EF-001	1, 2
FLU-T-002	M101	101	-	-	60	FLU-EUH-001	3
FLU-T-003	M101	102	HONEYWELL	T631F	85	FLU-EF-002	1, 2
FLU-T-004	M101	102	-	-	60	FLU-EUH-003	3
LEE CREEK							
FLU-T-005	M201	201	HONEYWELL	T631F	85	FLU-EF-003	1, 2
FLU-T-006	M201	201	-	-	60	FLU-EUH-002	3
FLU-T-007	M201	202	HONEYWELL	T631F	85	FLU-EF-004	1, 2
FLU-T-008	M201	202	-	-	60	FLU-EUH-004	3

REMARKS:
 1. ADJUSTABLE SETPOINT.
 2. CORROSION RESISTANT.
 3. MANUFACTURER PROVIDED THERMOSTAT.

HVAC SEQUENCE OF OPERATIONS

- HEATING SYSTEMS
 - ELECTRIC UNIT HEATERS.
 - EACH ELECTRIC UNIT HEATER INDICATED BELOW SHALL BE CONTROLLED BY ITS RESPECTIVE WALL-MOUNTED THERMOSTAT.
 - EXHAUST FANS
 - INTERMITTENT OPERATION
 - THERMOSTAT CONTROL
 - EQUIPMENT INDICATED BELOW SHALL BE CONTROLLED BY LINE VOLTAGE THERMOSTAT WITH ADJUSTABLE SET-POINT. THE FAN SHALL BE CONTROLLED BY THE INTERLOCK INDICATED BELOW. WHEN THE SPACE TEMPERATURE RISES ABOVE THE THERMOSTAT SET-POINT, THE EXHAUST FAN SHALL ENERGIZE. BEFORE THE FAN IS PERMITTED TO START IN ANY MODE OF OPERATION, THE CONTROL DAMPERS ASSOCIATED WITH THE FAN SHALL BE PROVEN OPEN. WHEN THE SPACE TEMPERATURE FALLS BELOW THE THERMOSTAT SETTING, THE FAN SHALL BE DE-ENERGIZED AND THE CONTROL DAMPERS SHALL RETURN TO THEIR NORMALLY CLOSED POSITION. A TEMPERATURE CONTROL PANEL SHALL BE PROVIDED AND WIRED AS INDICATED AND SPECIFIED ON THE ELECTRICAL PLANS. REFER TO DRAWING E002 TYPICAL EXHAUST FAN WIRING DIAGRAM.

EQUIPMENT	INTERLOCK	CONTROL DAMPERS
FLU-EF-001	FLU-T-001	FLU-CD-001, FLU-CD-002
FLU-EF-002	FLU-T-003	FLU-CD-003, FLU-CD-004
FLU-EF-003	FLU-T-005	FLU-CD-005, FLU-CD-006
FLU-EF-004	FLU-T-007	FLU-CD-007, FLU-CD-008

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

Scale For Microfitting
Millimeters

Inches

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.



BURNS & MCDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	NOVEMBER, 2014	detailed	W. PYLE
designed	J. BORRIES	checked	A. VAWTER



LEE CREEK & LAKE FORT SMITH
 WATER TREATMENT PLANTS

**FLUORIDE FEED SYSTEMS
 HVAC SCHEDULES AND
 SEQUENCE OF OPERATIONS**

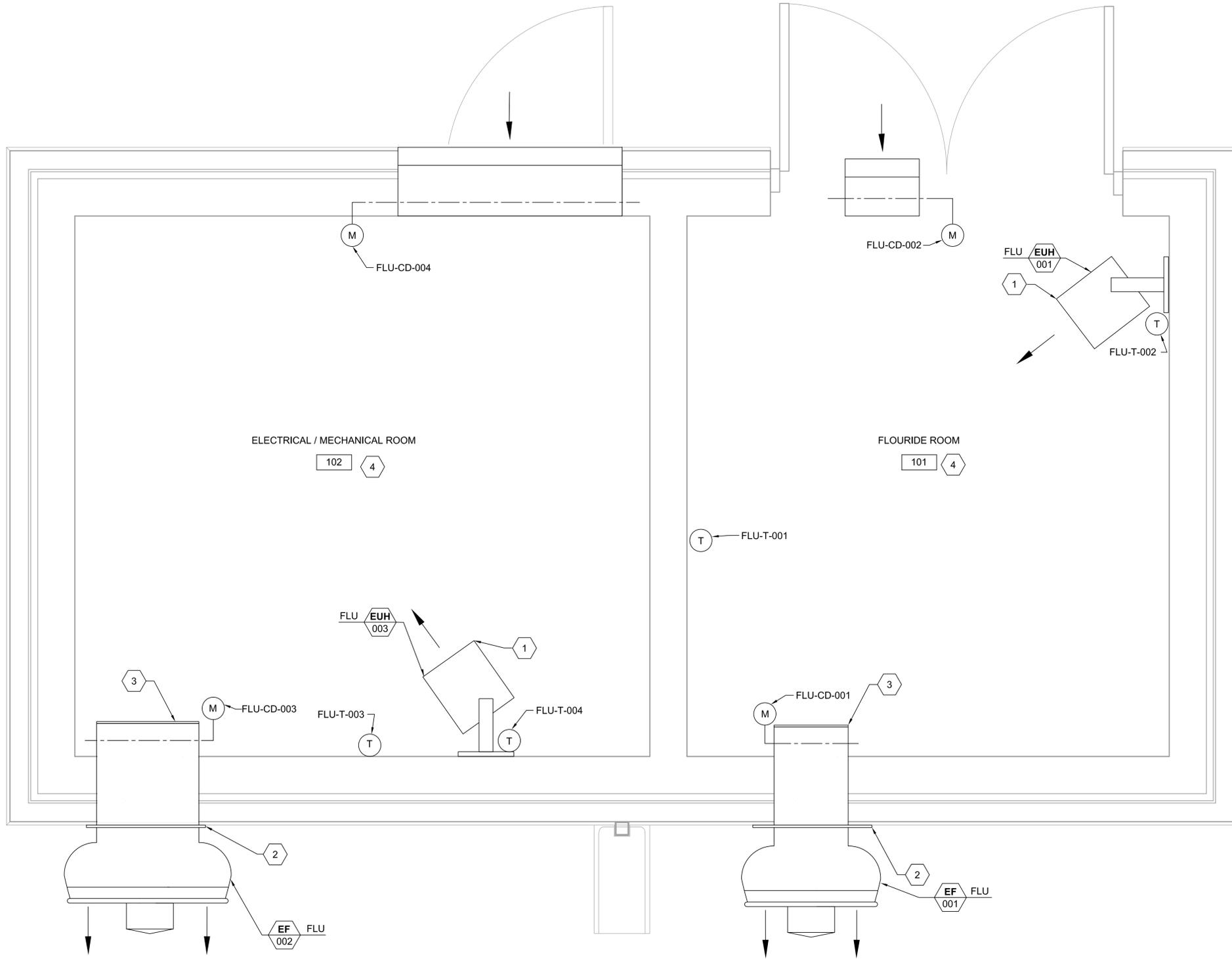
project	81174	contract	
drawing	M001	rev.	0
sheet	of	sheets	
file	81174_M001.DWG		



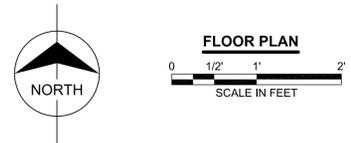
Judy Macoubrie
 This document has been digitally signed.
 06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

Scale For Microminim
Millimeters
Inches



- KEYED NOTES:**
- 1 BOTTOM OF ELECTRIC UNIT HEATER 7'-6" AFF.
 - 2 SEE DWG A302 FOR EXHAUST FAN DETAIL.
 - 3 COVER OPENING WITH 1/4" SST BIRDSCREEN
 - 4 INSTALL OR PERMANENTLY FASTEN LABELS ON EACH MAJOR ITEM OF MECHANICAL EQUIPMENT. LOCATE EQUIPMENT LABELS WHERE ACCESSIBLE AND VISIBLE. CLEAN EQUIPMENT OR SURFACE OF ANY SUBSTANCES THAT COULD INHIBIT BOND. PROVIDE MULTILAYER, MULTICOLOR PLASTIC LABELS FOR MECHANICAL ENGRAVING, 1/8" THICK AND HAVING PREDRILLED HOLES FOR ATTACHMENT HARDWARE. LETTERS SHALL BE BLACK, BACKGROUND WHITE. LABELS SHALL BE CAPABLE OF WITHSTANDING 160° F. LABEL SIZES SHALL BE CLEAR, CONSISTENT AND NO LESS THAN 2 1/4" x 3/4". MINIMUM LETTER SIZE 1/2". FASTEN WITH STAINLESS STEEL RIVETS, SELF-TAPPING SCREWS, OR ADHESIVE THAT IS PERMANENT AND COMPATIBLE WITH LABEL AND SUBSTRATE. INCLUDE EQUIPMENT'S DESIGNATION OR UNIQUE EQUIPMENT NUMBER.



COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.



BURNS & MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	W. PYLE
designed	J. BORRIES	checked	A. VAWTER

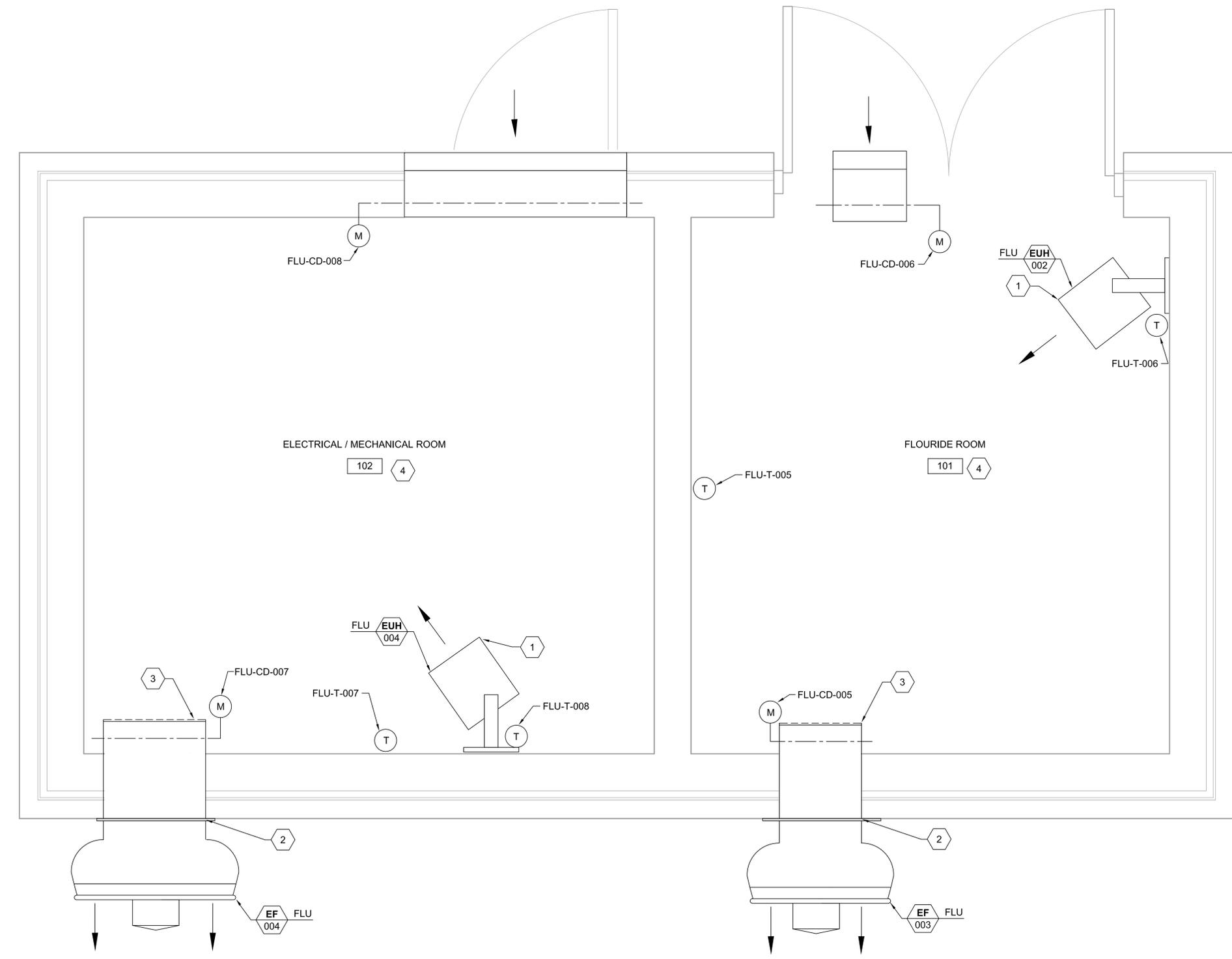
The City of Fort Smith
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS



FLUORIDE FEED SYSTEMS	
LAKE FORT SMITH HVAC PLAN	
project	81174
contract	
drawing	M101 - 0
sheet	of sheets
file	81174_M101.DWG

Judy Masubnie
This document has been digitally signed
06/10/15

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



KEYED NOTES:

- 1 BOTTOM OF ELECTRIC UNIT HEATER 7'-6" AFF.
- 2 SEE DWG A302 FOR EXHAUST FAN DETAIL.
- 3 COVER OPENING WITH 1/4" SST BIRDSCREEN
- 4 INSTALL OR PERMANENTLY FASTEN LABELS ON EACH MAJOR ITEM OF MECHANICAL EQUIPMENT. LOCATE EQUIPMENT LABELS WHERE ACCESSIBLE AND VISIBLE. CLEAN EQUIPMENT OR SURFACE OF ANY SUBSTANCES THAT COULD INHIBIT BOND. PROVIDE MULTILAYER, MULTICOLOR PLASTIC LABELS FOR MECHANICAL ENGRAVING. 1/8" THICK AND HAVING PREDRILLED HOLES FOR ATTACHMENT HARDWARE. LETTERS SHALL BE BLACK, BACKGROUND WHITE. LABELS SHALL BE CAPABLE OF WITHSTANDING 160° F. LABEL SIZES SHALL BE CLEAR, CONSISTENT AND NO LESS THAN 2 1/4"x 3/4". MINIMUM LETTER SIZE 1/2". FASTEN WITH STAINLESS STEEL RIVETS, SELF-TAPPING SCREWS, OR ADHESIVE THAT IS PERMANENT AND COMPATIBLE WITH LABEL AND SUBSTRATE. INCLUDE EQUIPMENT'S DESIGNATION OR UNIQUE EQUIPMENT NUMBER.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	W. PYLE
designed	J. BORRIES	checked	A. VAWTER

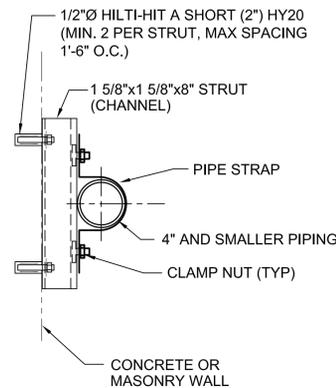
The City of Fort Smith
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS



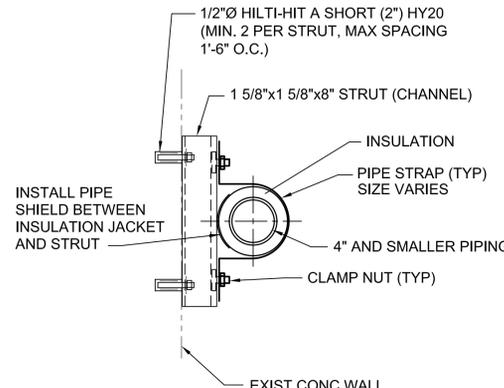
FLUORIDE FEED SYSTEMS
LEE CREEK
HVAC PLAN

project	81174	contract	
drawing	M201	rev.	0
sheet	of	sheets	
file	81174_M201.DWG		

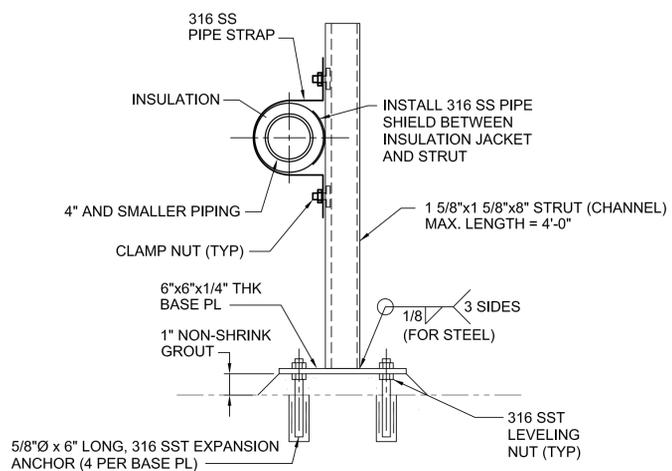
no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



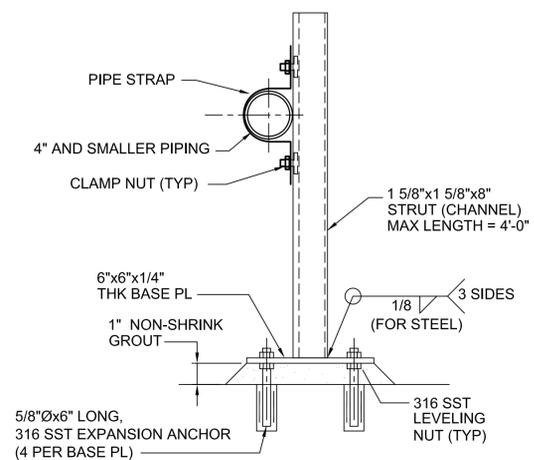
PIPE SUPPORT MPS-1
(4" AND SMALLER PIPING)
NOT TO SCALE



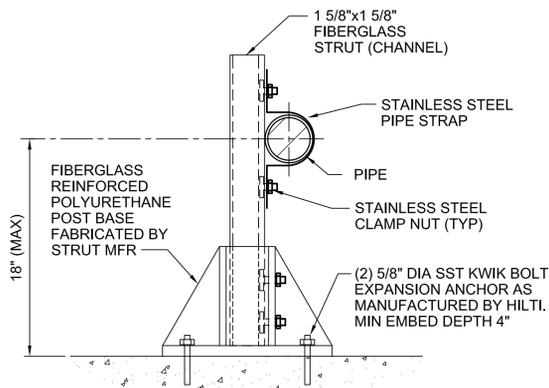
PIPE SUPPORT MPS-3
(4" AND SMALLER PIPING)
NOT TO SCALE



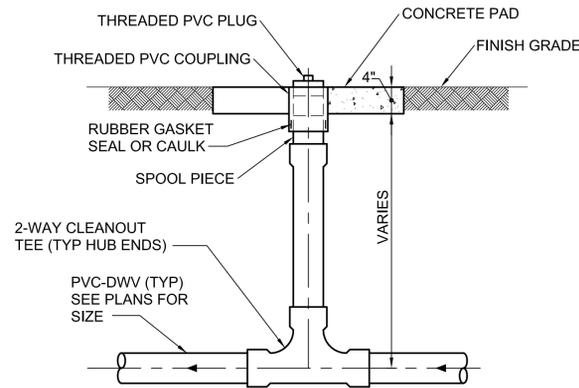
PIPE SUPPORT MPS-4
(4" AND SMALLER PIPING)
NOT TO SCALE



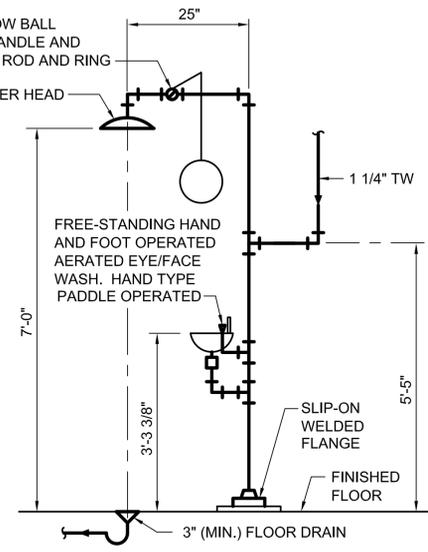
PIPE SUPPORT MPS-5
(4" AND SMALLER PIPING)
NOT TO SCALE



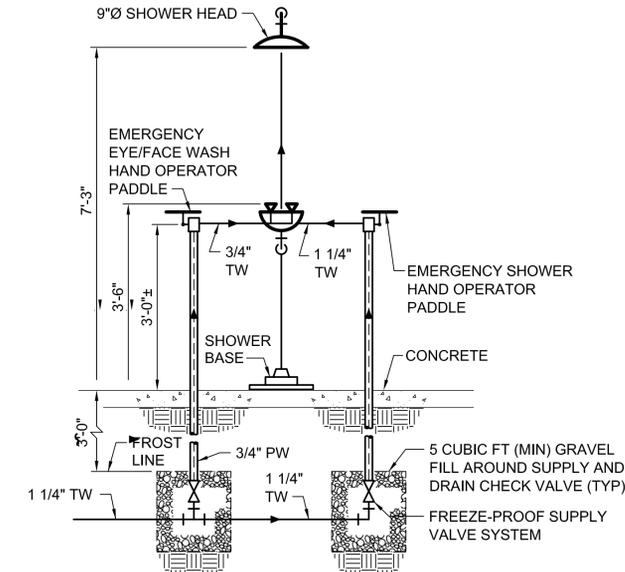
PIPE SUPPORT MPS-6
(4" AND SMALLER PIPING)
NOT TO SCALE



2-WAY CLEANOUT DETAIL
NOT TO SCALE



EMERGENCY EYEWASH AND SHOWER DETAIL
NOT TO SCALE



FREEZE-PROOF EMERGENCY EYEWASH AND SHOWER DETAIL
NOT TO SCALE

Millimeters
 Scale For Microminim
 Inches

COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	APRIL, 2015	detailed	J. BORRIES
designed	J. BORRIES	checked	A. VAWTER



FLUORIDE FEED SYSTEMS
PLUMBING
MISCELLANEOUS DETAILS

project	81174	contract	
drawing	P001	rev.	0
sheet	of	sheets	
file	81174_P001.DWG		



Judy Macubine
This document has been digitally signed
06/10/15

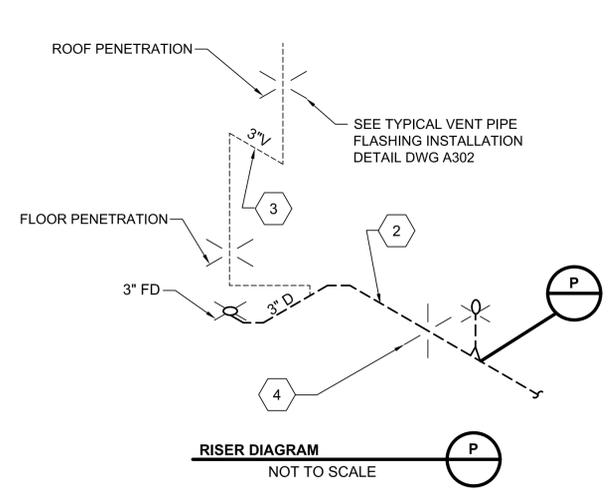
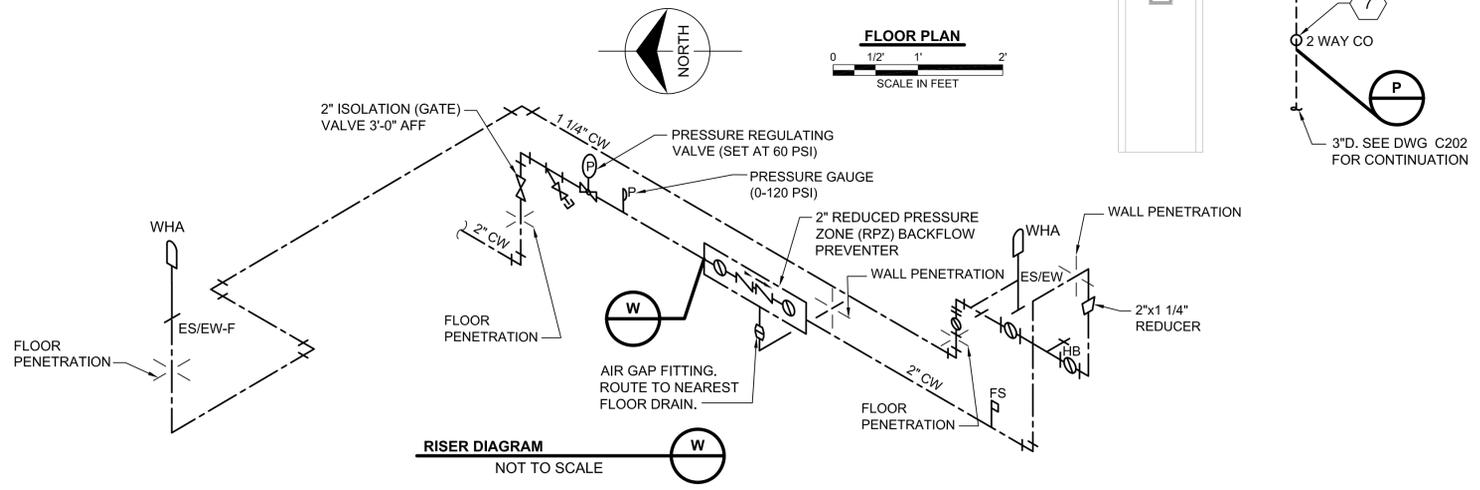
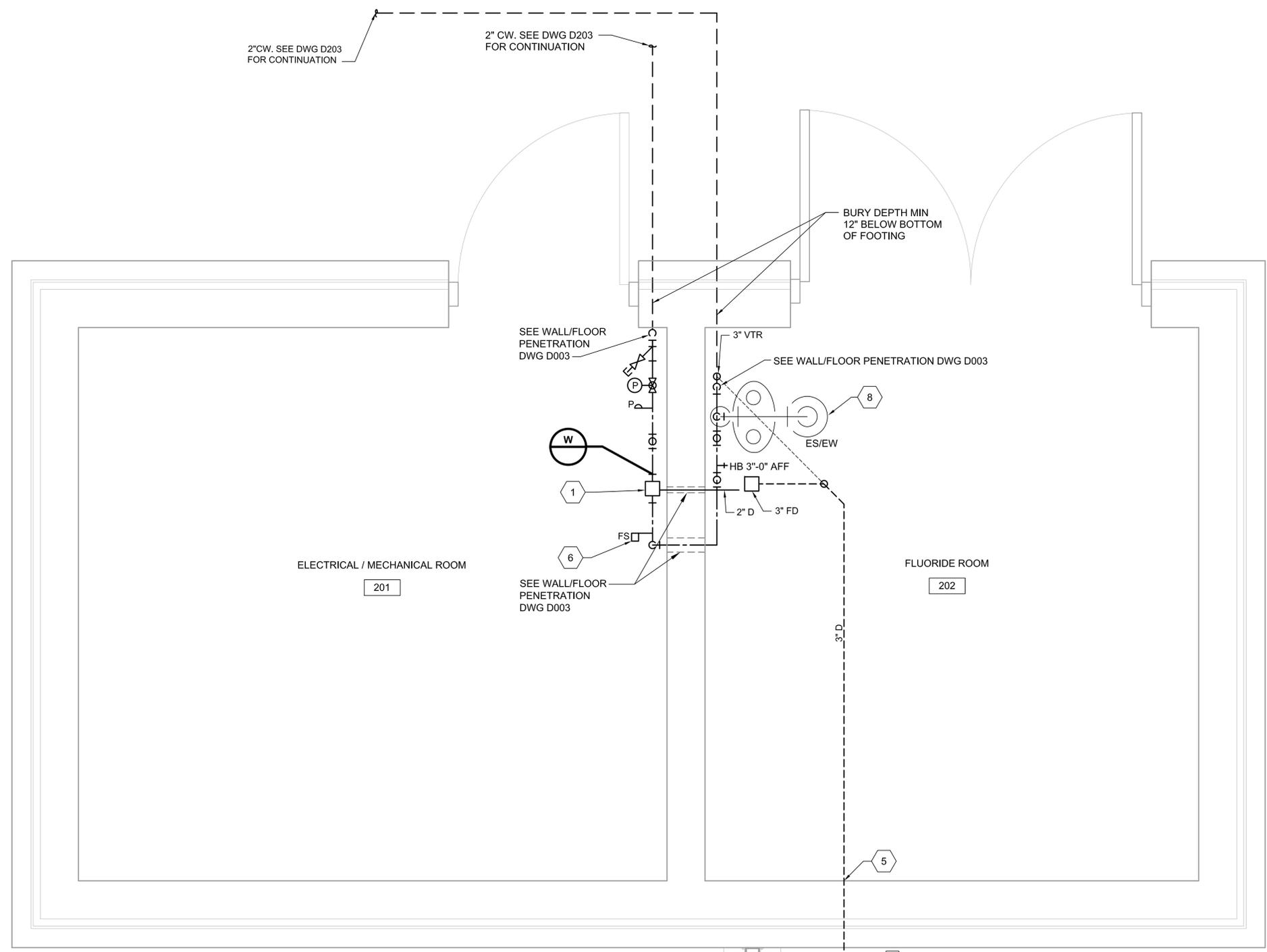
no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

KEYED NOTES:

- 1 PROVIDE EQUIPMENT SUPPORTS PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- 2 SLOPE DRAIN 1% IN DIRECTION OF FLOW.
- 3 OFFSET VENT A MINIMUM OF 3'-0" FROM INSIDE FACE OF EXTERIOR WALL PRIOR TO VENT THRU ROOF (VTR) PENETRATION. SEE DWG A302 FOR TYPICAL VENT PIPE FLASHING AT ROOF.
- 4 INV EL. 499'-9" FOUNDATION WALL PENETRATION. COORDINATE ELEVATION WITH DWG C202 AND S201.
- 5 PROVIDE PIPE SLEEVE FOR FOUNDATION PENETRATION PER SPECIFICATIONS.
- 6 COORDINATE FLOW SWITCH REQUIREMENTS WITH DWG E202.
- 7 SEE 2 WAY CLEANOUT INSTALLATION DETAIL DWG P001.
- 8 SEE ES/EW INSTALLATION DETAIL DWG P001.

GENERAL NOTES:

1. ALL UNDERGROUND PIPING SHALL BE BURIED BELOW 2'-6".
2. FLOOR PIPE SUPPORTS SHALL BE MPS-4 OR MPS-5 AS REQUIRED. SEE DETAIL ON DWG D003.
3. WALL PIPE SUPPORTS SHALL BE MPS-1 OR MPS-3 AS REQUIRED. SEE DETAIL ON DWG P001.
4. PIPE SUPPORTS IN FLUORIDE ROOM SHALL BE MPS-6. SEE DETAIL ON DWG P001.
5. ALL PIPE AND VALVES IN ELECTRICAL/MECHANICAL ROOM SHALL BE COPPER. PROVIDE COPPER TO CPVC UNION FOR TRANSITION IN ELECTRICAL/MECHANICAL ROOM.
6. ALL PIPE AND VALVES IN FLUORIDE ROOM SHALL BE CPVC.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	NOVEMBER, 2014	detailed	J.BORRIES
designed	J.BORRIES	checked	A. VAWTER

The City of Fort Smith
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK PRELIMINARY
FLUORIDE BUILDING LAYOUT

project	81174	contract	
drawing	P201	rev.	0
sheet	of	sheets	
file	81174_P201_LEE CREEK.DWG		



COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

STANDARD ELECTRICAL LEGEND

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

ONE-LINE AND CONTROL DIAGRAMS

SCHEMATIC DIAGRAM DEVICE DESIGNATIONS

PLANS

	POWER CIRCUIT AND EQUIPMENT INSTALLED BY THIS CONTRACT		SINGLE SPEED NON-REVERSING MANUAL MOTOR STARTER
	EXISTING CIRCUIT AND EQUIPMENT		SINGLE SPEED NON-REVERSING MAGNETIC MOTOR STARTER
	FUTURE POWER CIRCUIT AND EQUIPMENT		SINGLE SPEED REVERSING MAGNETIC MOTOR STARTER
	EQUIPMENT ENCLOSURE		TWO SPEED NON-REVERSING MAGNETIC MOTOR STARTER
	CONTROL OR INTERLOCK CIRCUIT		COMBINATION CIRCUIT BREAKER AND SINGLE SPEED NON-REVERSING MAGNETIC MOTOR STARTER WITH CONTROL POWER TRANSFORMER
	"X" INDICATES NUMBER OF DEVICES WHEN MORE THAN ONE		REDUCED VOLTAGE SOLID-STATE STARTER
	TERMINAL		VARIABLE FREQUENCY DRIVE
	CONNECTION		AMMETER SWITCH
	CIRCUIT BREAKER		VOLTMETER SWITCH
	FUSE		AMMETER
	FUSED DISCONNECT SWITCH		VOLTMETER
	DISCONNECT SWITCH		GENERATOR
	POLE MOUNTED FUSED DISCONNECT SWITCH		ELECTRIC MOTOR - APPROX. HORSEPOWER AS INDICATED
	PLUG-IN OR DRAWOUT CONNECTION		EQUIPMENT AS NOTED ON DIAGRAM
	POWER TRANSFORMER (XFMR)		GROUND CONNECTION
	CONTROL POWER TRANSFORMER		LIGHTNING ARRESTOR
	CURRENT TRANSFORMER, SINGLE RATIO (SHOWN WITH QUANTITY)		ELECTRONIC POWER METER
	POTENTIAL TRANSFORMER (SHOWN WITH QUANTITY)		TRANSIENT VOLTAGE SURGE SUPPRESSOR
	DELTA WINDING CONNECTION		FEEDER MANAGEMENT RELAY
	GROUNDING Y WINDING CONNECTION		GENERATOR MANAGEMENT RELAY
	CAPACITOR		TIME-OVERCURRENT AND INSTANTANEOUS TRIP FEATURES OF DIGITAL TRIP UNIT
	THERMAL OVERLOADS		INSTANTANEOUS GROUND-FAULT TRIP FEATURE OF DIGITAL TRIP UNIT
	ALTERNATOR		
	AUTOMATIC SYNCHRONIZER		

DESIGNATIONS DESCRIBING DEVICE OPERATION OR FUNCTION		CURRENT TO CURRENT TRANSDUCER INDICATING LIGHT	
A	AUTOMATIC	I/I	ILLUMINATED LIGHT
AUTO		IPB	ILLUMINATED PUSHBUTTON
ACK	ACKNOWLEDGE	ISP	ILLUMINATED SELECTOR PUSHBUTTON
CL	CLOSE	ISS	ILLUMINATED SELECTOR SWITCH
FWD	FORWARD	LLS	LIQUID LEVEL SWITCH
H	HAND	LS	LIMIT SWITCH
HI	HIGH	M	MOTOR STARTER COIL OR CONTACT
HR	HAND RESET	MV/I	MILLIVOLT TO CURRENT TRANSDUCER
HS	HIGH SPEED	MS	MOTOR STARTER AUXILIARY RELAY
INST	INSTANTANEOUS	OL	OVERLOAD RELAY
L	LOW	PB	PUSHBUTTON
LCL	LOCAL	PS	PRESSURE SWITCH
LS	LOW SPEED	SOL	SOLENOID (OTHER THAN VALVE)
NC	NORMALLY CLOSED	SPB	SELECTOR PUSHBUTTON
NO	NORMALLY OPEN	SR	SOLID STATE SCANNER RECEIVER
O	OFF	SS	SELECTOR SWITCH
OP	OPEN	ST	SOLID STATE SCANNER TRANSMITTER
REV	REVERSE	SV	SOLENOID VALVE
RMT	REMOTE	TDR	TIME DELAY RELAY
		TMR	TIMER
		TS	TORQUE SWITCH
		VS	VACUUM SWITCH
		XFMR	TRANSFORMER
DEVICE DESIGNATIONS		CIRCUIT CALLOUT	
AL	ALARM RELAY OR ALARM TIMER		WIRE COLOR DESIGNATION: B = BLACK; R = RED; ETC.
ALT	ALTERNATING RELAY		DEVICE IDENTIFICATION
ANN	ANNUNCIATOR		DEVICE DESIGNATION
CB	CIRCUIT BREAKER		DEVICE IDENTIFICATION
CNTOR	CONTACTOR		DEVICE DESIGNATION
CPT	CONTROL POWER TRANSFORMER		
CR	CONTROL RELAY		
CS	CONTROL SWITCH		
EP	ELECTRIC - PNEUMATIC		
ES	ELECTRONIC SWITCH		
ETM	ELAPSED TIME METER		
F/I	FREQUENCY TO CURRENT TRANSDUCER		
F/MV	FREQUENCY TO MILLIVOLT TRANSDUCER		
FD	FLUID DETECTOR		
FLS	FLOW SWITCH		
FS	FLOAT SWITCH		
FSR	FREQUENCY TO SHIFT TONE TRANSDUCER		
FST	FREQUENCY SHIFT TONE TRANSMITTER		
FU	FUSE		
I/F	CURRENT TO FREQUENCY TRANSDUCER		

	NEW CONSTRUCTION		FLUSH MOUNTED DUPLEX RECEPTACLE OUTLET.
	EXISTING CONSTRUCTION		"U" DENOTES RECEPTACLE BACKED UP ON UPS POWER, OUTLET COLOR SHALL BE RED.
	CONDUIT EXPOSED		SURFACE MOUNTED DUPLEX RECEPTACLE OUTLET
	CONDUIT CONCEALED IN WALL, CEILING OR HIDDEN FROM VIEW		FLUSH MOUNTED DUPLEX RECEPTACLE OUTLET. GROUND FAULT CIRCUIT INTERRUPTER TYPE. "WP" DENOTES WEATHERPROOF.
	CONDUIT CONCEALED IN FLOOR OR UNDERGROUND		SURFACE MOUNTED DUPLEX RECEPTACLE OUTLET. GROUND FAULT CIRCUIT INTERRUPTER TYPE. "WP" DENOTES WEATHERPROOF.
	FLEXIBLE CONDUIT		SURFACE MOUNTED QUADRIplex RECEPTACLE OUTLET. "WP" DENOTES WEATHERPROOF. "GFCI" DENOTES GROUND FAULT CIRCUIT INTERRUPTER.
	HOME RUN TO PANELS, 2#12 AND A #12 GND IN A 3/4" CONDUIT UNLESS NOTED OTHERWISE.		240V RECEPTACLE
	CONDUIT TURNING UP		480V RECEPTACLE
	CONDUIT TURNING DOWN		TWIST LOCK RECEPTACLE
	CONDUIT TERMINATED AND CAPPED		SURFACE OR PENDANT FLUORESCENT FIXTURE, WITH LUMINAIRE TYPE L-1
	CONDUIT WITH BUSHING		SURFACE OR PENDANT EMERGENCY FLUORESCENT FIXTURE
	CONDUIT PASSING THRU ELEVATION		RECESSED FLUORESCENT FIXTURE
	GROUND CABLE		RECESSED EMERGENCY FLUORESCENT FIXTURE
	BOLTED GROUND CONNECTION		SINGLE FACE EXIT LIGHT, ARROW DENOTES DIRECTION OF EGRESS, NO ARROW DENOTES NO EGRESS DIRECTION
	WELDED GROUND CONNECTION		POLE-MOUNTED AREA LIGHT
	GROUND ROD		STREET LIGHT AND POLE
	POWER PANEL		INTEGRAL PHOTOELECTRIC CELL AND RELAY (PHOTOCONTROL)
	LIGHTING PANEL		STROBE LIGHT
	DISCONNECT SWITCH		STROBE LIGHT AND HORN COMBINATION
	MINILOAD CENTER		HORN
	MANUAL MOTOR STARTER		THERMOSTAT
	MOTOR SPACE HEATER		PULL BOX
	DAMPER MOTOR		MOTOR
	CONTROL STATION ON-OFF, HOA, ETC.		JUNCTION BOX
	HEAT TRACE POWER CONNECTION		TELEPHONE OUTLET (1-RJ-11 JACK)
	SINGLE POLE SWITCH		DATA OUTLET (2-RJ-45 JACKS)
	WALL SWITCH OCCUPANCY SENSOR		CONTROL DEVICES AS INDICATED
	THREE-WAY SWITCH		HIGH MAST LIGHT
	FOUR-WAY SWITCH		
	DEMOLITION		
	ELECTRIC STRIKE		
	REQUEST TO EXIT DEVICE		
	DOOR SWITCH		
	GATE SWITCH		
	CARD READER		
	CEILING MOUNTED OCCUPANCY SENSOR		
	CONTROL DAMPER		

INSTRUMENT AND EQUIPMENT IDENTIFICATION

SCHEMATIC DIAGRAMS		EQUIPMENT TAGGING SYSTEM		CABLE NUMBERING SYSTEM	
	(A) PUSH-BUTTON - NORMALLY OPEN MOMENTARY (B) PUSH-BUTTON - NORMALLY CLOSED MOMENTARY	ID - AAA - BBB - XX Y Z		A - BBBXX - ###	
	(A) MAINTAINED PUSH-BUTTON - NORMALLY OPEN (B) MAINTAINED PUSH-BUTTON - NORMALLY CLOSED	FACILITY IDENTIFIER (WHEN APPLICABLE)		CABLE TYPE: C = CONTROL F = FIBER I = INSTRUMENT P = POWER T = ETHERNET	
	(A) PRESSURE OR VACUUM SWITCH - CLOSURES WITH INCREASING PRESSURE OR DECREASING VACUUM (B) PRESSURE OR VACUUM SWITCH - OPENS WITH INCREASING PRESSURE OR DECREASING VACUUM	FACILITY AREA OR SYSTEM IDENTIFIER (SEE TABLE BELOW)		ASSOCIATED EQUIPMENT/PANEL/INSTRUMENT TAG	
	(A) FLOW SWITCH - CLOSURES WITH INCREASING FLOW (B) FLOW SWITCH - OPENS WITH INCREASING FLOW	EQUIPMENT/INSTRUMENT IDENTIFIER (SEE TABLE BELOW)		SEQUENTIAL NUMBER	
	(A) FLOAT OR OTHER LIQUID LEVEL SWITCH - CLOSURES WITH RISING LEVEL (B) FLOAT OR OTHER LIQUID LEVEL SWITCH - OPENS WITH RISING LEVEL	LOOP NUMBER			
	(A) LIMIT SWITCH - NORMALLY CLOSED (B) LIMIT SWITCH - NORMALLY OPEN	UNIT NUMBER			
	(A) LIMIT SWITCH - NORMALLY OPEN (B) LIMIT SWITCH - NORMALLY CLOSED	UNIT MODIFIER (WHEN APPLICABLE)			
	(A) TEMPERATURE SWITCH - CLOSURES WITH RISING TEMPERATURE (B) TEMPERATURE SWITCH - OPENS WITH RISING TEMPERATURE	FACILITY IDENTIFIERS		EQUIPMENT IDENTIFIERS*	
	(A) NORMALLY OPEN TIME DELAY CONTACT. CONTACT CLOSURES ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL. (B) NORMALLY CLOSED TIME DELAY CONTACT. CONTACT OPENS ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL.	IDENTIFIER (ID)		IDENTIFIER (BBB)	
	INDICATING LIGHT - PILOT TYPE WITH COLOR INDICATED: R-RED, A-AMBER, G-GREEN, W-WHITE, BL-BLUE, I-IVORY AND Y-YELLOW	IDENTIFIER DESCRIPTION		IDENTIFIER DESCRIPTION	

FACILITY IDENTIFIERS		EQUIPMENT IDENTIFIERS*	
LEE	LEE CREEK WTP	CMS	CHEMICAL METERING SKID
LFS	LAKE FORT SMITH WTP	CST	CONTROL STATION
FACILITY AREA OR SYSTEM IDENTIFIERS		FS	FLOW SWITCH
FLU	FLUORIDE BUILDING	LCP	LOCAL CONTROL PANEL
FLE	EAST FILTER BUILDING	LIT	LEVEL INDICATING TRANSMITTER
FBW	FILTER BACKWASH WASTE	LI	LEVEL INDICATOR
		MCP	MAIN CONTROL PANEL
		MP	METERING PUMP
		TNK	TANK
		TP	TRANSFER PUMP

*NOTE: ADDITIONAL EQUIPMENT IDENTIFIERS ARE SHOWN IN THE ABBREVIATIONS SECTION THIS SHEET.

ABBREVIATIONS

A	AMPERES	LC	LIGHTING CONTACTOR
AF	AMP FRAME	LP	LIGHTING PANEL
AFG	ABOVE FINISHED GRADE	MCC	MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MCP	MOTOR CIRCUIT PROTECTOR
AIC	AMPS INTERRUPTING CURRENT	NEC	NATIONAL ELECTRIC CODE
AWG	AMERICAN WIRE GAUGE	NEUT	NEUTRAL
AT	AMP TRIP	OL	OVERLOAD
BC	BARE COPPER WIRE	N.O.	NORMALLY OPEN
BF	BELOW FLOOR	N.C.	NORMALLY CLOSED
BG	BELOW GRADE	PCS	PLANT CONTROL SYSTEM
BKR	BREAKER	P	POLE
C	CONDUIT	PDP	POWER DISTRIBUTION PANEL
CB	CIRCUIT BREAKER	PHC	PHOTOCELL
CHL	CHLORINE	PLC	PROGRAMMABLE LOGIC CONTROLLER
CP	CONTROL PANEL	PNL	PANELBOARD
CPT	CONTROL POWER TRANSFORMER	PVC	POLYVINYL CHLORIDE
CRGS	COATED RIGID GALVANIZED STEEL	RAL	RIGID ALUMINUM
EF	EXHAUST FAN	REC	RECEPTACLE
EL	ELEVATION	SP	SPARE
EWH	ELECTRIC WALL HEATER	SPD	SURGE PROTECTIVE DEVICE
EUH	ELECTRIC UNIT HEATER	SW	SWITCH
EX	EXPOSED	TYP	TYPICAL
EXT	EXTERIOR	UE	UNDERGROUND ELECTRICAL
FOP	FIBER-OPTIC PANEL	VFD	VARIABLE FREQUENCY DRIVE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	WH	WATER HEATER
GND	GROUND	WP	WEATHERPROOF
HH	HAND HOLE	XFMR/XF	TRANSFORMER
JB	JUNCTION BOX		

- GENERAL NOTES:**
- ALL "P" CIRCUITS #8 AWG AND LARGER SHALL BE TYPE "SE2" CABLE UNLESS INDICATED OTHERWISE.
 - ALL "P", CIRCUITS #10 AWG AND SMALLER SHALL BE TYPE "SVN3" UNLESS INDICATED OTHERWISE.
 - ALL "C" CIRCUITS SHALL BE TYPE "CEV1" CABLE UNLESS INDICATED OTHERWISE. TYPE "C" CIRCUITS DESIGNATED WITH A GROUND CONDUCTOR SHALL HAVE ONE OF THE AVAILABLE CONDUCTORS WRAPPED WITH GREEN TAPE AT EACH END TO DESIGNATE THE GROUND CONDUCTOR.
 - ALL "I" CIRCUITS SHALL BE TYPE "IVV1" UNLESS INDICATED OTHERWISE.
 - REFER TO CABLE SCHEDULES AND ONE-LINE DIAGRAMS FOR CIRCUIT CALLOUTS.
 - THIS IS A STANDARD ELECTRICAL LEGEND AND NOT ALL DEVICES AND DEVICE DESIGNATIONS ARE USED ON THIS PROJECT.



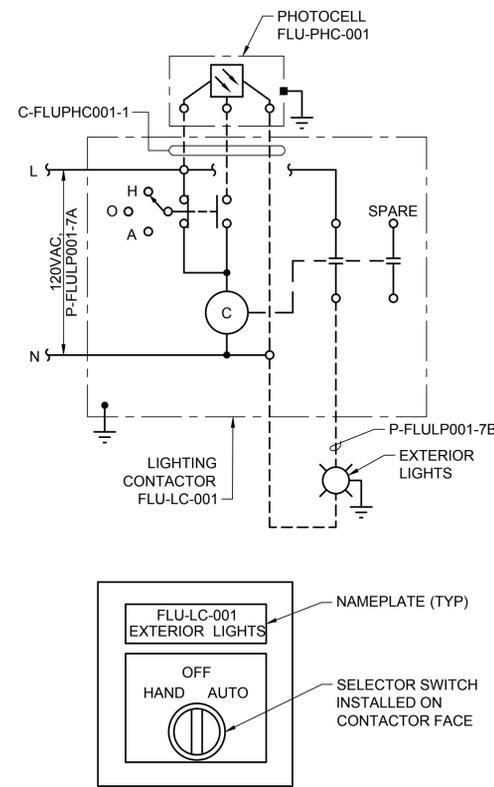
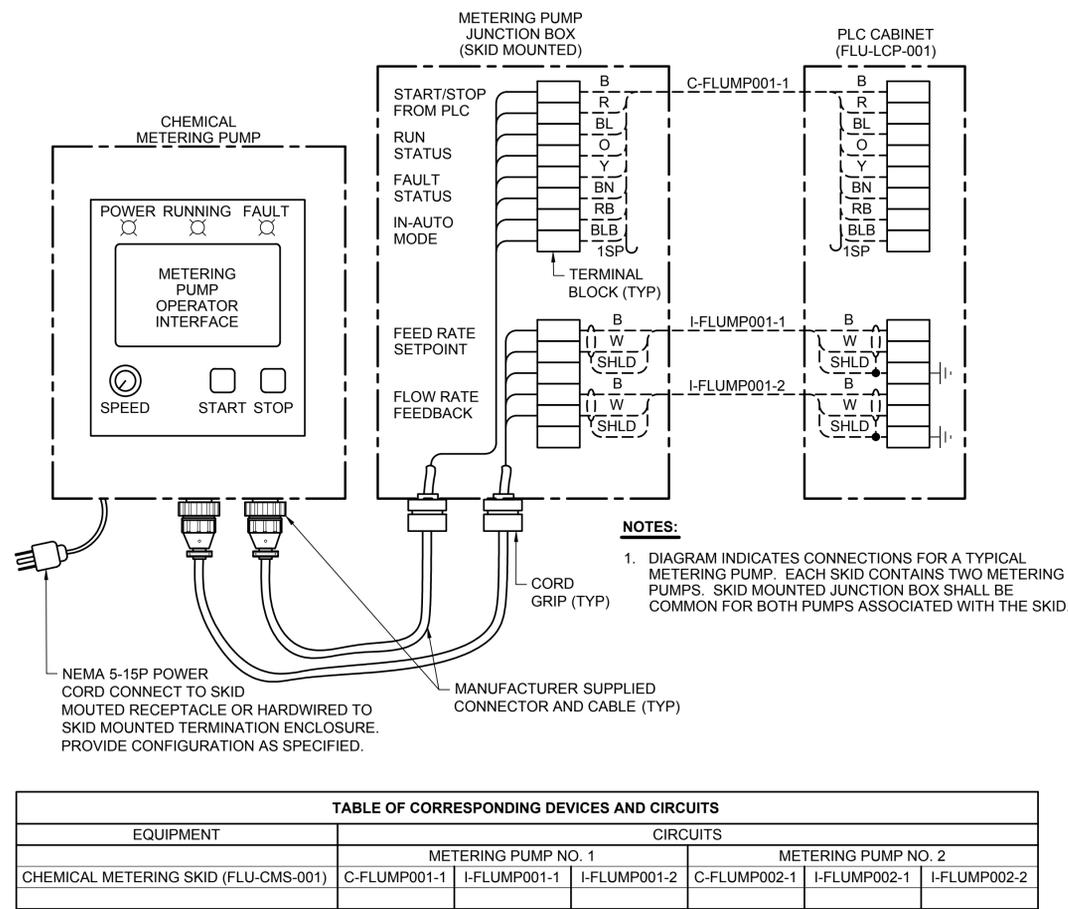
BURNS & McDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	JANUARY, 2015	detailed	J. RECKART
designed	S. TAYLOR	checked	C. HA

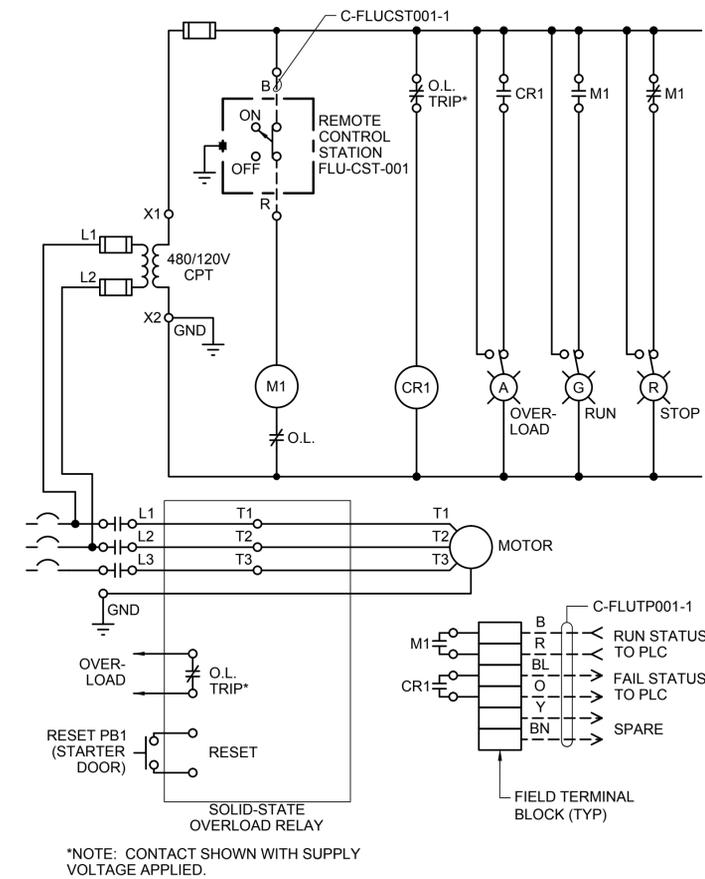
The City of Fort Smith
 LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS	
ELECTRICAL LEGEND	
project	81174
contract	
drawing	E001 - 0
sheet	of sheets
file	81174_E001.DWG

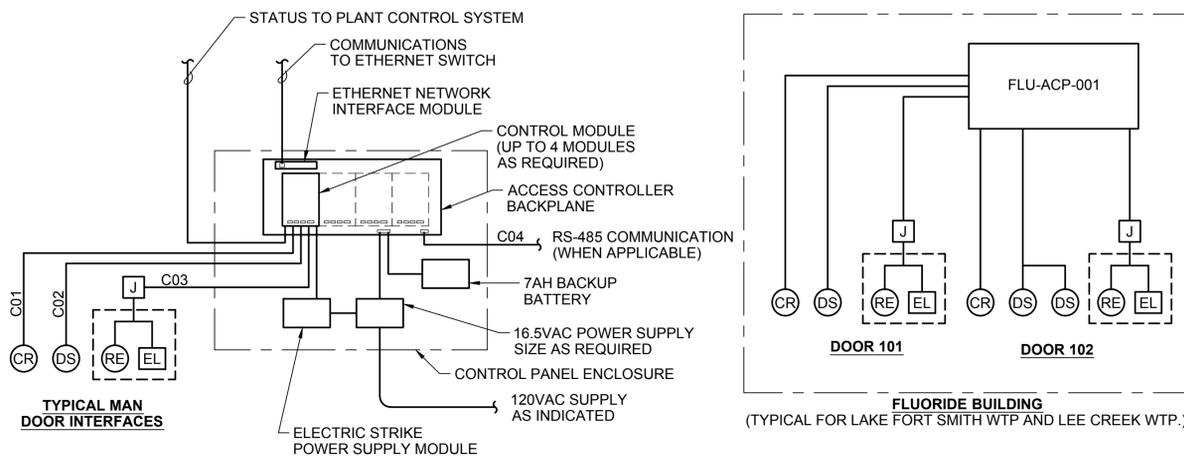




TYPICAL LIGHTING CONTACTOR DIAGRAM



TYPICAL TRANSFER PUMP STARTER DIAGRAM



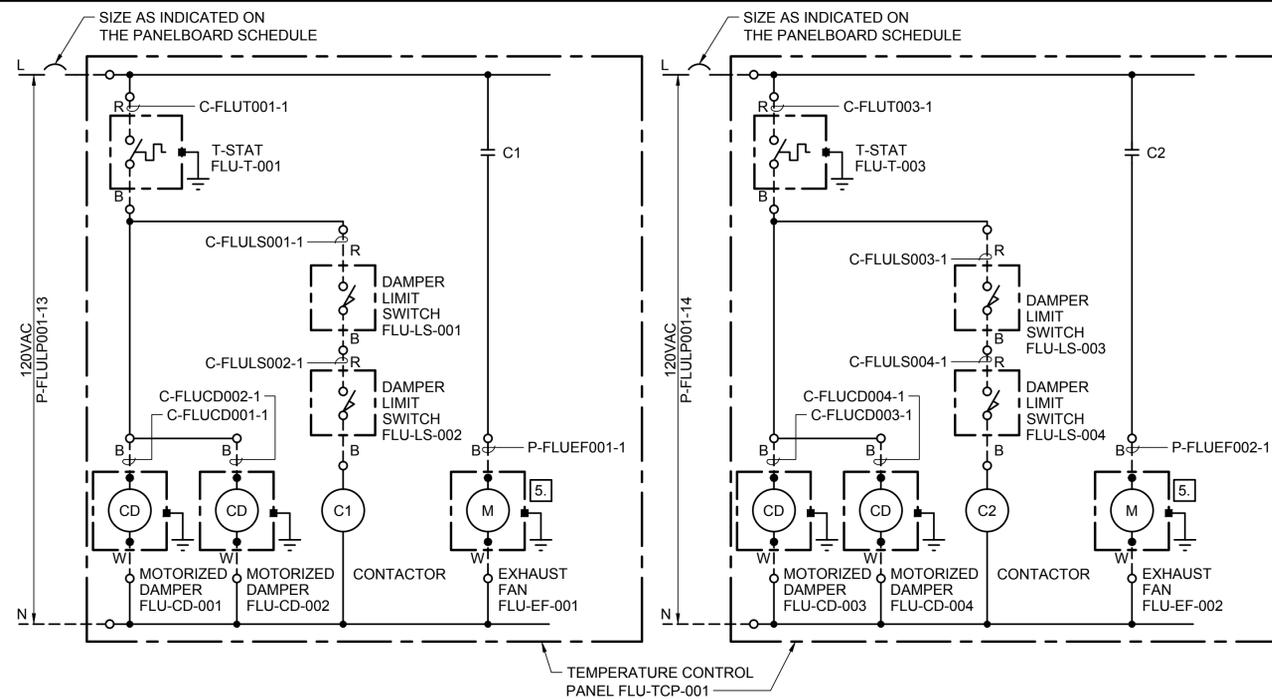
TYPICAL ACCESS CONTROL PANEL (ACP) CONFIGURATION

CABLE SCHEDULE

	DESCRIPTION	MFG NO./TYPE	JACKET	INSULATION	PRIMARY USE
C01	6/C, #22 SHLD		PVC	PVC	ACP - CR
C02	2/C, #18 SHLD		PVC	PVC	ACP - DS
C03	6/C, #18 SHLD		PVC	PVC	ACP - EL, RE
C04	2-TP (4/C), #24 SHLD	BELDEN 9842	PVC	POLYETHYLENE	ACP - RS-485 COMM

NOTES:

- ACCESS CONTROL PANELS SHALL BE CONNECTED TO THE PLANT ETHERNET NETWORK. REFER TO THE ASSOCIATED PLANT CONTROL SYSTEM COMMUNICATIONS DIAGRAM FOR FIBER OPTIC NETWORK EQUIPMENT, CABLING, AND ROUTING REQUIREMENTS.
- DOOR HARDWARE IS SPECIFIED IN SECTION 0870 00 - FINISH HARDWARE.



NOTES:

- ALL WIRING SHALL BE #12 AWG. FIELD WIRING SHOWN IS REMOTE TO THE TEMPERATURE CONTROL ENCLOSURE.
- CONTACTORS SHALL BE COMPACT DIN-RAIL MOUNTED TYPE WITH CONTACTS RATED FOR 20A MINIMUM.
- BOTH CONTACTORS AND ASSOCIATED FIELD WIRING TERMINALS INDICATED SHALL BE MOUNTED IN A COMMON NEMA 12 HINGED ENCLOSURE. SIZE AS REQUIRED FOR INSTALLED COMPONENTS. MINIMUM 12X12X6.
- THE INDICATED CIRCUIT NUMBERS AND ASSOCIATED TAGS ARE REPRESENTATIVE OF THE LAKE FORT SMITH WTP MECHANICAL EQUIPMENT TAGS. REFER TO THE LEE CREEK CABLE SCHEDULE AND PLANS FOR TAGS ASSOCIATED WITH THE LEE CREEK WTP EQUIPMENT.

5. LOCAL DISCONNECT SWITCH SHALL BE PROVIDED WITH THE EXHAUST FAN.

TYPICAL EXHAUST FAN CONTROL WIRING DIAGRAM

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



BURNS & McDONNELL

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	J. RECKART
designed	S. TAYLOR	checked	C. HA



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS

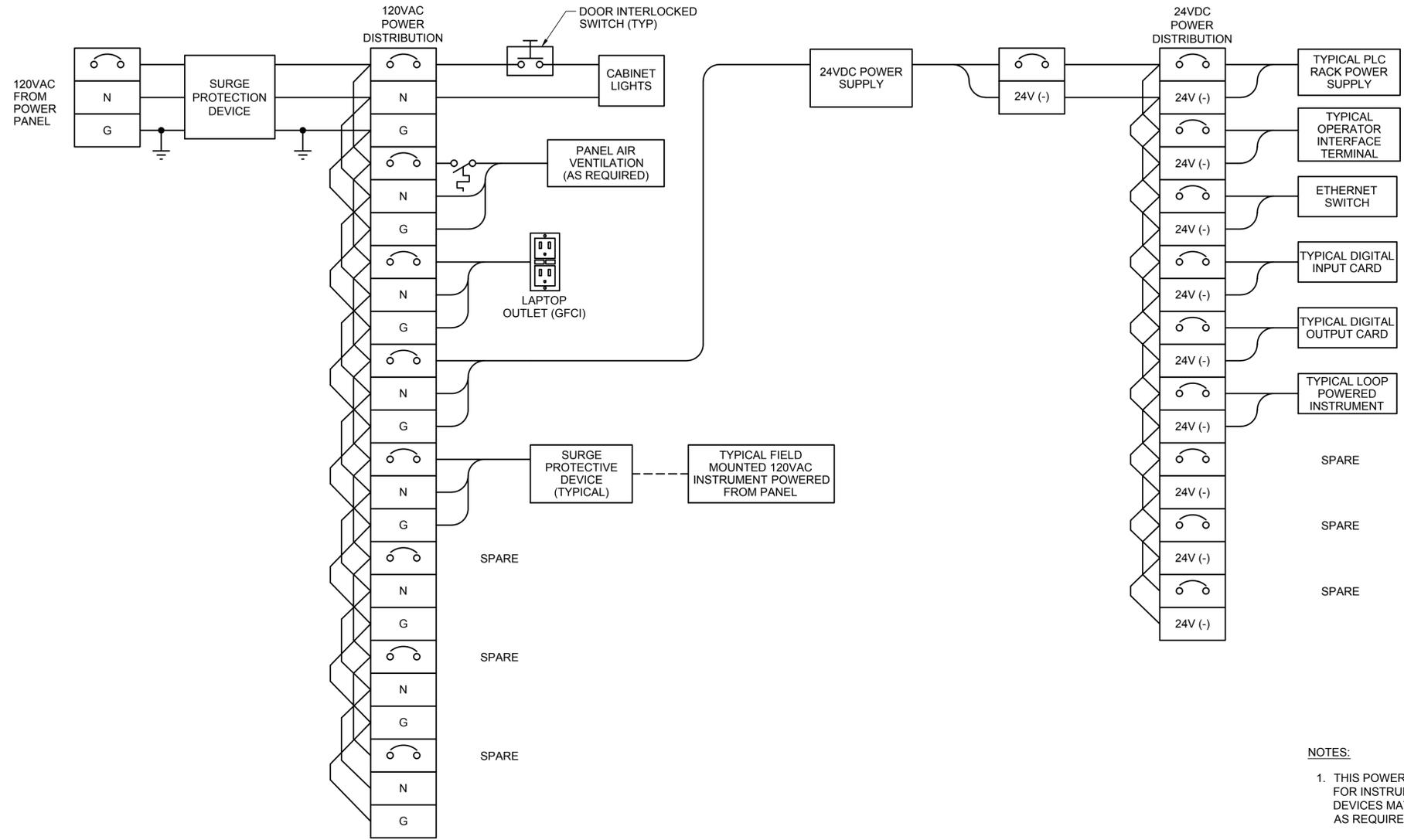
TYPICAL WIRING SCHEMATICS

SHEET 1 OF 2

project	81174	contract	
drawing	E002	rev.	0
sheet	of	sheets	
file	81174_E002.DWG		



no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



TYPICAL PLC CABINET POWER DISTRIBUTION DIAGRAM

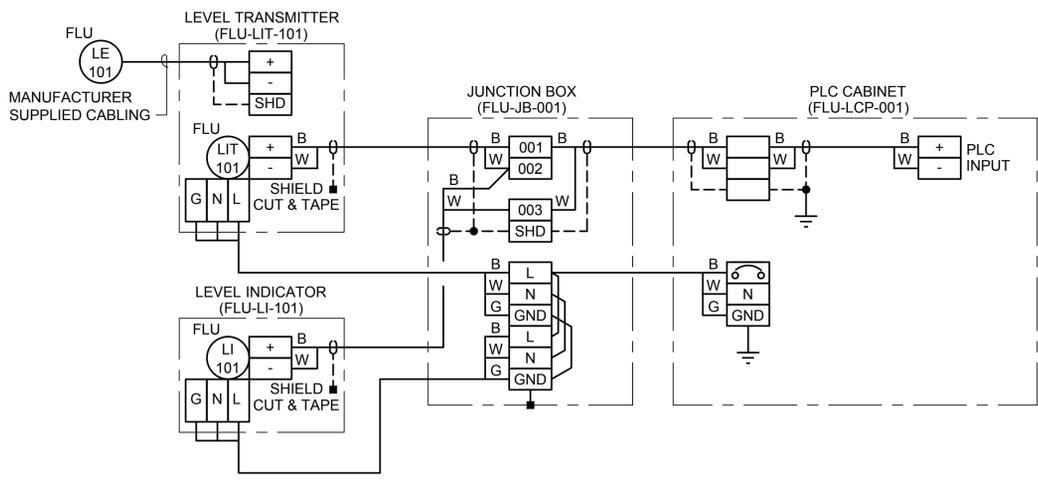
- NOTES:
1. THIS POWER DISTRIBUTION DIAGRAM IS TYPICAL. QUANTITIES FOR INSTRUMENTS, I/O CARDS, POWER SUPPLIES, AND OTHER DEVICES MAY VARY FOR EACH CABINET. INSTALL QUANTITIES AS REQUIRED.
 2. ADDITIONAL SURGE PROTECTIVE DEVICES SHALL BE PROVIDED AS SPECIFIED FOR INSTRUMENTATION OUTSIDE OF THE BUILDING ENVELOPE. REFER TO SPECIFICATIONS FOR REQUIREMENTS.



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	designed	detailed	checked
JANUARY, 2015	S. TAYLOR	J. RECKART	C. HA

- NOTES:
1. THIS IS A TYPICAL DIAGRAM AND NOT ALL DEVICES AND COMPONENTS ARE SHOWN FOR CLARITY. SURGE PROTECTIVE DEVICES SHALL BE PROVIDED AS SPECIFIED FOR INSTRUMENTATION OUTSIDE OF THE BUILDING ENVELOPE. REFER TO SPECIFICATIONS FOR REQUIREMENTS.



TYPICAL BULK TANK LEVEL INSTRUMENTATION LOOP DIAGRAM



The City of
Fort Smith
ARKANSAS
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

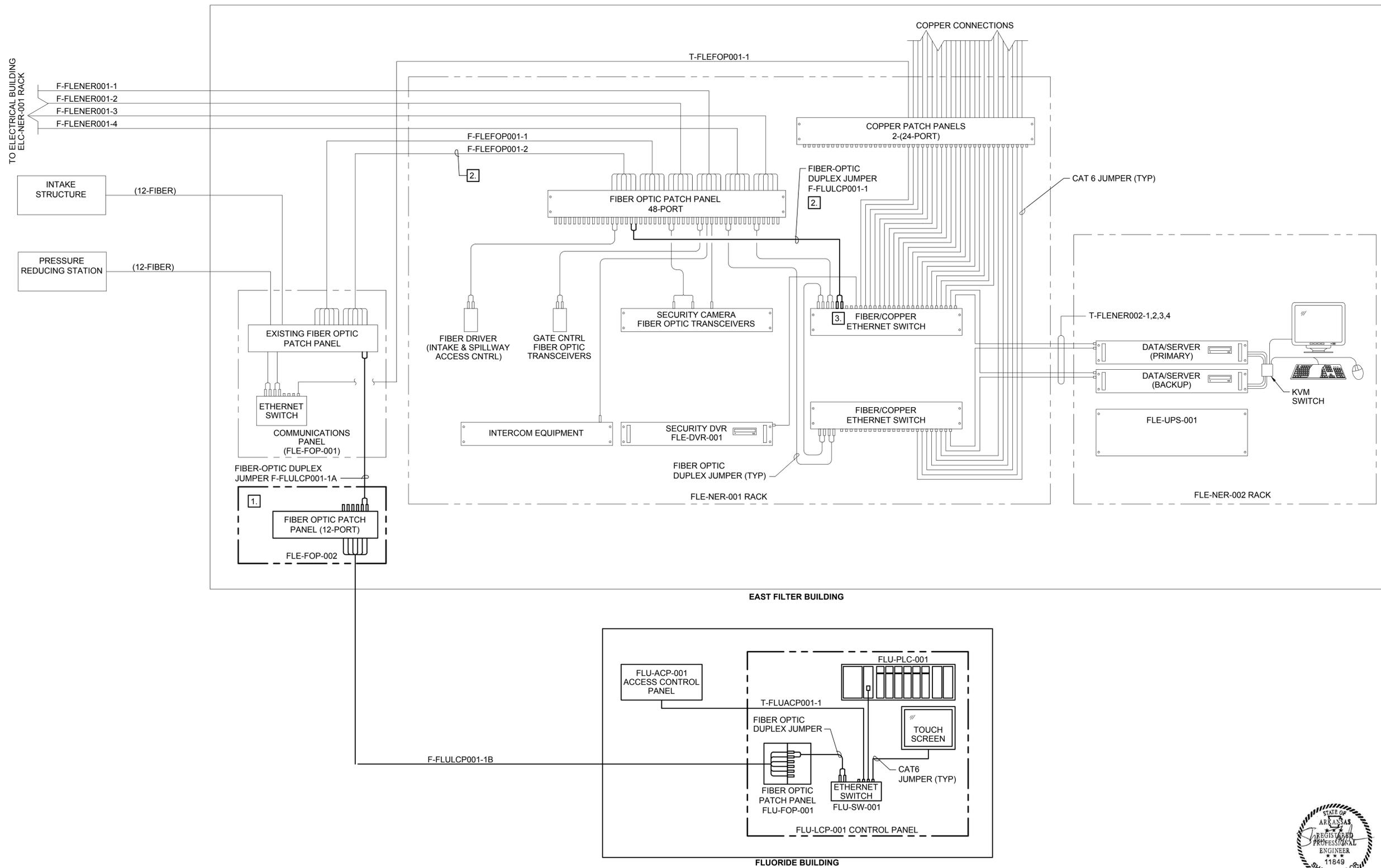
FLUORIDE FEED SYSTEMS	
TYPICAL WIRING SCHEMATICS	
SHEET 2 OF 2	
project	contract
81174	
drawing	rev.
E003	0
sheet	of sheets
file 81174_E003.DWG	

Scale For Microfitting
Millimeters
Inches

- NOTES:**
1. INSTALL NEW FIBER PATCH PANEL AND ASSOCIATED ENCLOSURE FOR NEW FIBER TERMINATIONS. REFER TO PLAN DRAWINGS FOR LOCATION.
 2. UTILIZE EXISTING SPARE FIBERS BETWEEN THE FLE-FOP-001 AND FLE-NER-001. INSTALL NEW FIBER-OPTIC JUMPERS AT LOCATIONS INDICATED.
 3. PROVIDE NEW SFP FIBER MODULE FOR EXISTING MOXA SWITCH (MODEL PT-7728) FOR CONNECTION TO THE FLUORIDE BUILDING NETWORK SWITCH. MODULE M4 PORT 3 OR 4 ARE AVAILABLE FOR USE.
 4. THIS NETWORK DIAGRAM IS A SIMPLIFIED DIAGRAM AND IS NOT INTENDED TO SHOW ALL EXISTING CONNECTIONS. EXISTING CONNECTIONS AND CABLE NUMBERS ARE FOR REFERENCE ONLY. NEW CONNECTIONS SHALL BE MADE AS INDICATED TO INCORPORATE THE NEW FLUORIDE EQUIPMENT INTO THE EXISTING PLANT CONTROL SYSTEM NETWORK.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

Scale For Microfitting
Millimeters
Inches



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

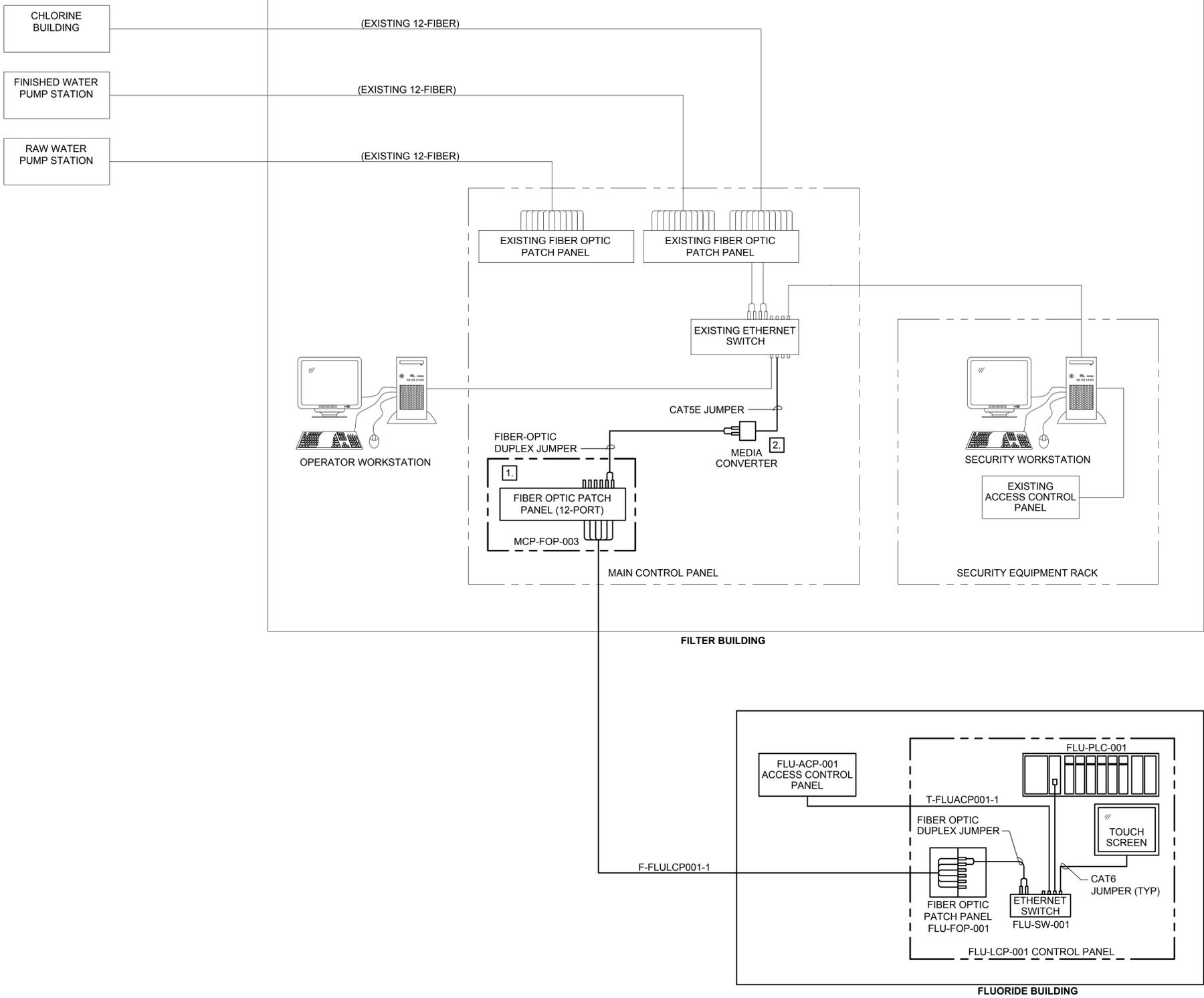
date	designed	detailed	checked
JANUARY, 2015	S. TAYLOR	J. RECKART	C. HA



FLUORIDE FEED SYSTEMS
LAKE FORT SMITH
PARTIAL NETWORK
COMMUNICATION DIAGRAM

project	contract
81174	
drawing	rev.
E004	0
sheet	of sheets
file 81174_E004.DWG	





- NOTES:**
1. INSTALL NEW FIBER PATCH PANEL AND ASSOCIATED TERMINATIONS IN THE EXISTING MAIN CONTROL PANEL ENCLOSURE.
 2. INSTALL FIBER TO COPPER MEDIA CONVERTER FOR CONNECTION TO THE EXISTING ETHERNET SWITCH.
 3. THIS NETWORK DIAGRAM IS A SIMPLIFIED DIAGRAM AND IS NOT INTENDED TO SHOW ALL EXISTING CONNECTIONS. EXISTING CONNECTIONS AND CABLE NUMBERS ARE FOR REFERENCE ONLY. NEW CONNECTIONS SHALL BE MADE AS INDICATED TO INCORPORATE THE NEW FLUORIDE EQUIPMENT INTO THE EXISTING PLANT CONTROL SYSTEM NETWORK.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	J. RECKART
designed	S. TAYLOR	checked	C. HA



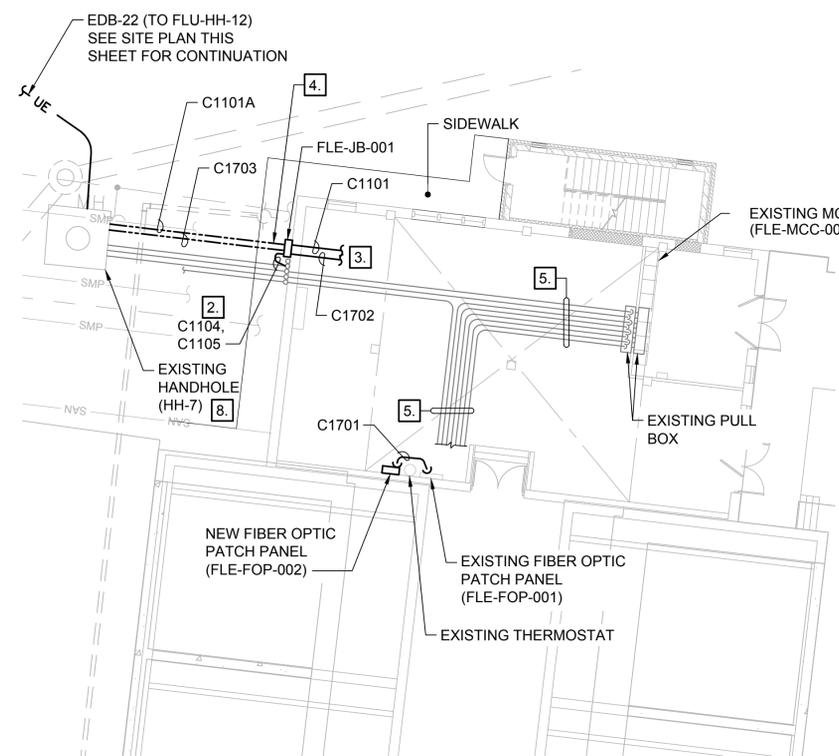
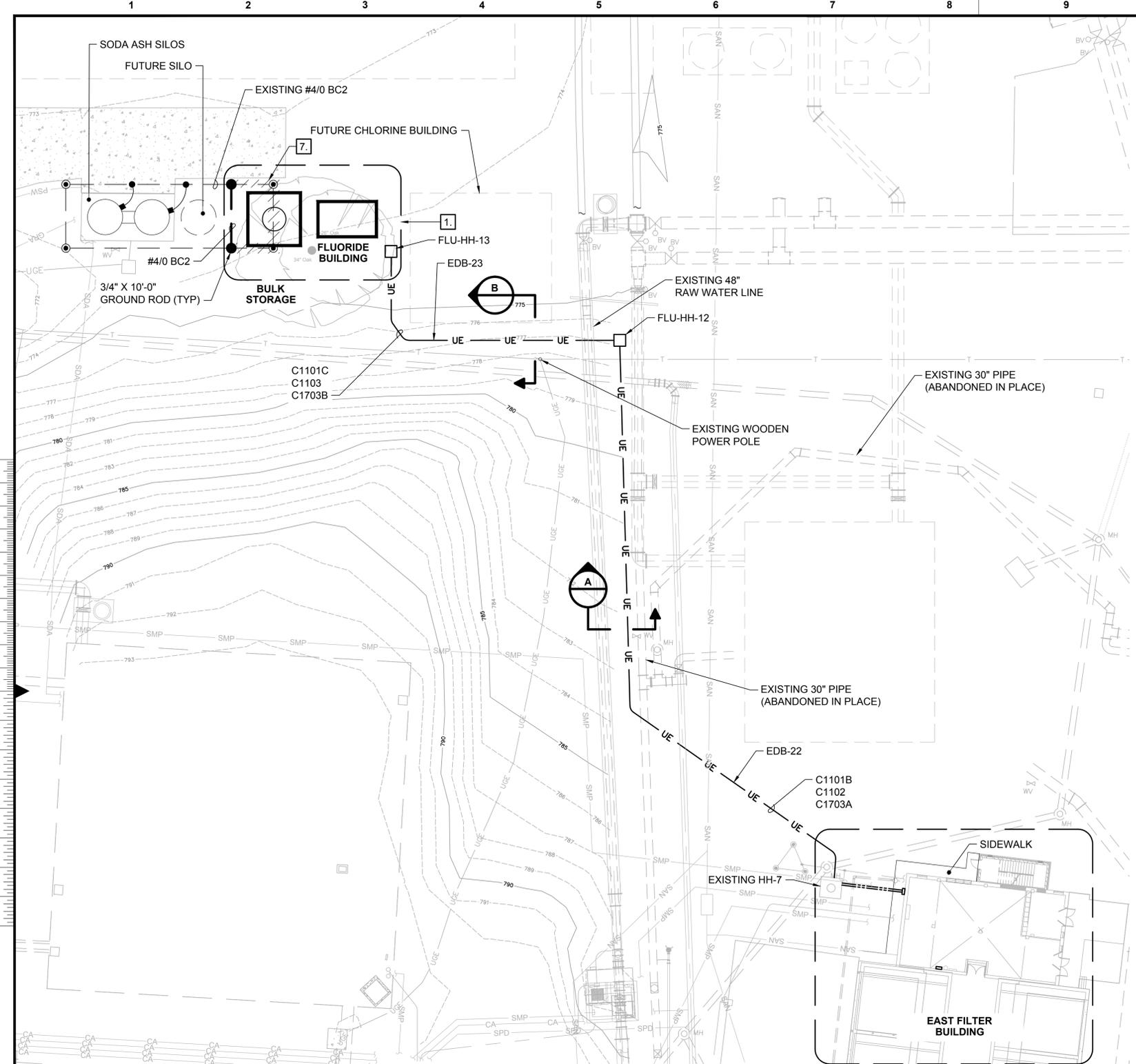
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LEE CREEK WTP
PARTIAL NETWORK
COMMUNICATION DIAGRAM

project	81174	contract	
drawing	E005	rev.	0
sheet	of	sheets	
file	81174_E005.DWG		



COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

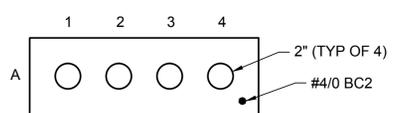


- NOTES:**
- REFER TO DRAWING E102 FOR ENLARGED ELECTRICAL PLAN.
 - EXTEND EXISTING STUB-UPS TO NEW JUNCTION BOX AS INDICATED.
 - CONTINUE TO MOTOR CONTROL CENTER FLE-MCC-001 AND FIBER OPTIC PATCH PANEL FLE-FOP-001. CONTRACTOR SHALL UTILIZE EXISTING TRAPEZE RACK WHEN POSSIBLE.
 - REMOVE SIDEWALK SECTION AT EXISTING JOINT FOR CONDUIT INSTALLATION. REPLACE AS REQUIRED. PROVIDE REINFORCING STEEL TO MATCH EXISTING. DOWELL INTO ADJACENT SIDEWALK SECTIONS AS REQUIRED FOR REPLACED SECTION
 - EXISTING CONDUITS AND TRAPEZE RACK SYSTEM.
 - SPECIFIED COORDINATES ARE FOR THE TOP-LEFT CORNER OF HANDHOLE. PLACE TOP ELEVATION OF HH-12 APPROXIMATELY 0.5-INCHES ABOVE FINISHED GRADE.
 - EXISTING GROUND ROD AND CONDUCTOR LOCATION ARE APPROXIMATE AND SHALL BE FIELD VERIFIED PRIOR TO EXCAVATION OF FOUNDATION. GROUND RODS AND GROUND CONDUCTOR THAT IS IN CONFLICT WITH THE FOUNDATION SHALL BE DEMOLISHED AND NEW GROUND RODS AND #4/0 BC2 SHALL BE INSTALLED AS SHOWN.
 - UTILIZE EXISTING HANDHOLE FOR NEW CONDUITS INDICATED CORE EXISTING HANDHOLE AS REQUIRED. PROVIDE GROUT SEAL AROUND NEW CONDUIT PENETRATIONS AS REQUIRED.

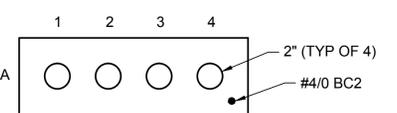
no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

Scale For Microfitting
Millimeters

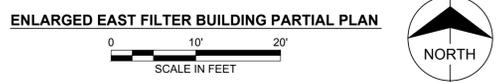
Inches



SECTION - EDB-22
NOT TO SCALE



SECTION - EDB-23
NOT TO SCALE



DUCT SCHEDULE EDB-22	
DUCT (ROW x COLUMN)	CIRCUIT DESCRIPTION
A1	P-FLEMCC001-15
A2	F-FLULCP001-1B
A3	SPARE
A4	SPARE

HAND HOLE SCHEDULE			
NO.	NORTHING EASTING	INNER DIMENSIONS	TOP OF HH ELEV.
HH-12	N 108874.12 E 107017.16	4' X 4' X 3'	6.
HH-13	N 108904.39 E 106940.86	4' X 4' X 3'	773.95

DUCT SCHEDULE EDB-23	
DUCT (ROW x COLUMN)	CIRCUIT DESCRIPTION
A1	P-FLEMCC001-15
A2	F-FLULCP001-1B
A3	SPARE
A4	SPARE



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	JANUARY, 2015	detailed	J. RECKART
designed	S. TAYLOR	checked	C. HA



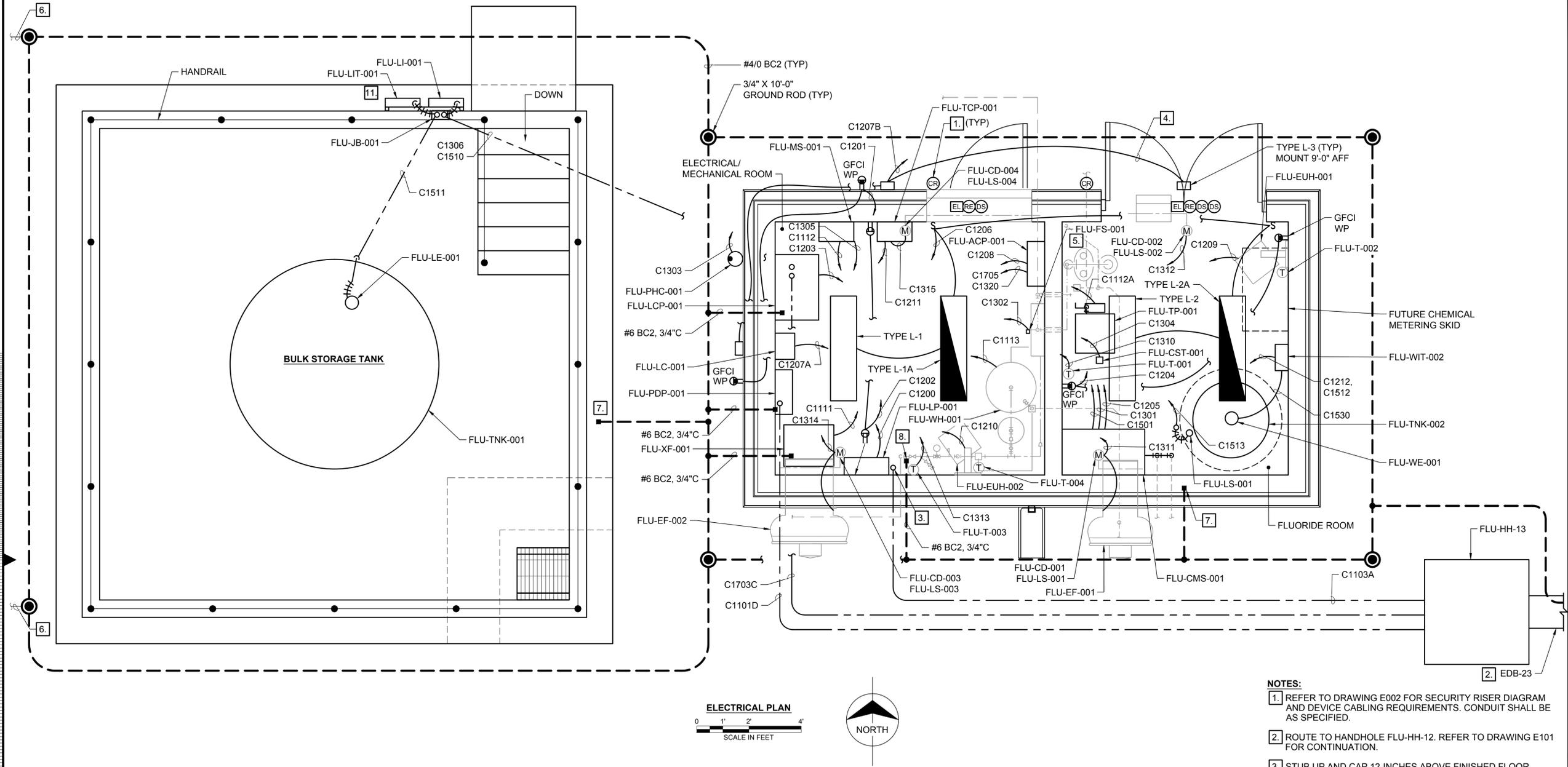
LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
LAKE FORT SMITH

ELECTRICAL SITE PLAN	
project	81174
contract	
drawing	E101 - 0
sheet	of sheets
file	81174_E101.DWG



COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.



ELECTRICAL PLAN
 SCALE IN FEET
 0 1' 2' 4'

- NOTES:**
- REFER TO DRAWING E002 FOR SECURITY RISER DIAGRAM AND DEVICE CABLING REQUIREMENTS. CONDUIT SHALL BE AS SPECIFIED.
 - ROUTE TO HANDHOLE FLU-HH-12. REFER TO DRAWING E101 FOR CONTINUATION.
 - STUB UP AND CAP 12-INCHES ABOVE FINISHED FLOOR.
 - CONDUIT SHOWN FOR EXTERIOR LIGHTS SHALL BE INSTALLED ON INTERIOR SIDE OF BUILDING.
 - COORDINATE EXACT LOCATION OF FLOW SWITCH WITH PLUMBING DRAWING P101.
 - REFER TO DRAWING E101 FOR CONTINUATION OF EXISTING GROUND GRID.
 - BOND TO STEEL REBAR IN CONCRETE FOUNDATION WITH COMPRESSION CONNECTOR IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.
 - BOND #6 BC2 GROUND CABLE TO WATER PIPE.
 - ALL INTERIOR LIGHTS SHALL BE SURFACE MOUNTED TO CEILING.
 - REFER TO DRAWING E103 FOR CABLE AND CONDUIT SCHEDULE.
 - PROVIDE STRUT RACK AT LOCATION SHOWN FOR MOUNTING THE LEVEL INDICATOR, TRANSMITTER, AND ASSOCIATED JUNCTION BOX.

LUMINAIRE SCHEDULE									
LUMINAIRE TYPE	TYPE OF FIXTURE	ACCEPTABLE MANUFACTURER	CATALOG NUMBER	CONSTRUCTION	MOUNTING	OPTICS	LAMP	BALLASTDRIVER	ACCESSORIES/NOTES
L-1	NARROW INDUSTRIAL STRIP	HE WILLIAMS OR APPROVED EQUAL	82-4-L64/840-DRV-UNV	DIE FORMED ALUMINUM HOUSING, EASY ACCESS TO BALLAST. ALUMINUM REFLECTOR.	PENDANT/SURFACE	N/A	LED, 6400 NOMINAL LUMENS MIN. 4000 DEGREE KELVIN CCT	NON-DIMMABLE DRIVER UNIVERSAL VOLTAGE (120-277V)	
L-1A	NARROW INDUSTRIAL STRIP	HE WILLIAMS OR APPROVED EQUAL	82-4-L64/840-EM/BSL310DRV-UNV	SAME AS LUMINAIRE TYPE L-1					1. INITIAL LUMEN OUTPUT OF 1300 LUMEN MINIMUM. 90 MINUTES MINIMUM OPERATING TIME.
L-2	DEEP FULLY ENCLOSED INDUSTRIAL LED STRIP	HE WILLIAMS OR APPROVED EQUAL	96-4-L40/840-HIA-DRV-UNV	POLYESTER REINFORCED FIBERGLASS ENCLOSURE. POLYCARBONATE LATCHES, CLEAR ACRYLIC LENSE.	PENDANT/SURFACE	N/A	LED, 4000 NOMINAL LUMENS MIN. 4000 DEGREE KELVIN CCT	NON-DIMMABLE DRIVER UNIVERSAL VOLTAGE (120-277V)	
L-2A	DEEP FULLY ENCLOSED INDUSTRIAL LED STRIP	HE WILLIAMS OR APPROVED EQUAL	96-4-L40/840-HIA-EM/BSL310-DRV-UNV	SAME AS LUMINAIRE TYPE L-2					1. INITIAL LUMEN OUTPUT OF 1300 LUMEN MINIMUM. 90 MINUTE MINIMUM OPERATING TIME.
L-3	SMALL WALL PACK	KIM LIGHTING	WD14D3/70HPS120LG	HEAVY WALL DIE-CAST ALUMINUM HOUSING. THERMOSET POLYESTER POWDER COAT FINISH.	SURFACE MOUNTED	DISTRIBUTION TYPE III OPTICS	1 - 70 W HIGH PRESSURE SODIUM	120V, HIGH POWER FACTOR CONSTANT WATTAGE AUTOTRANSFORMER	



BURNS & McDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	designed	detailed	checked
JANUARY, 2015	S. TAYLOR	J. RECKART	C. HA

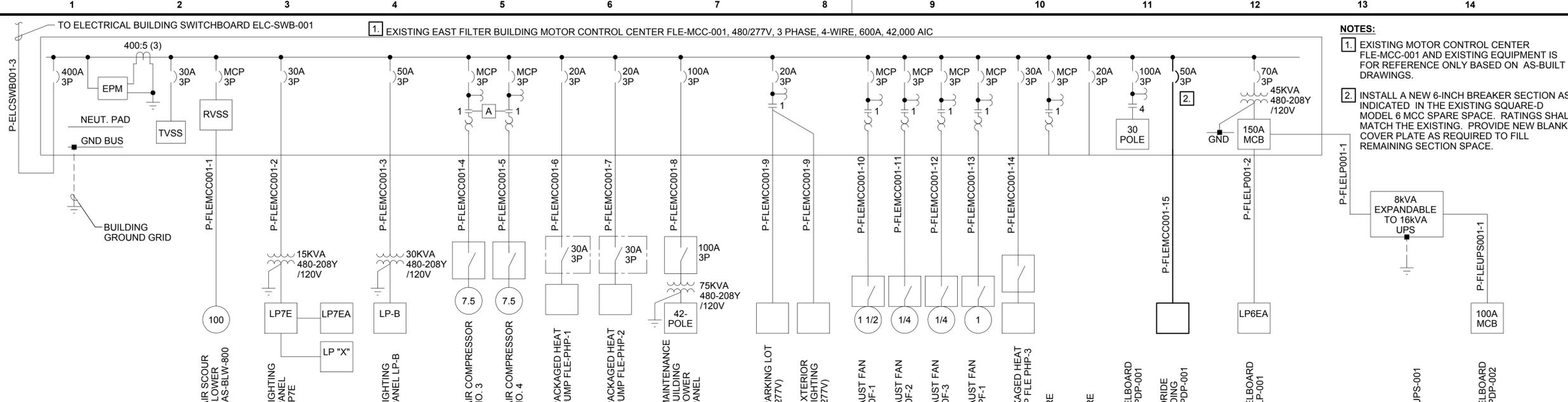


LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
 LAKE FORT SMITH
 FLUORIDE BUILDING
 ELECTRICAL PLANS

project	contract
81174	
drawing	rev.
E102	0
sheet	of sheets
file 81174_E102.DWG	





- NOTES:**
- EXISTING MOTOR CONTROL CENTER FLE-MCC-001 AND EXISTING EQUIPMENT IS FOR REFERENCE ONLY BASED ON AS-BUILT DRAWINGS.
 - INSTALL A NEW 6-INCH BREAKER SECTION AS INDICATED IN THE EXISTING SQUARE-D MODEL 6 MCC SPARE SPACE. RATINGS SHALL MATCH THE EXISTING. PROVIDE NEW BLANK COVER PLATE AS REQUIRED TO FILL REMAINING SECTION SPACE.

LAKE FORT SMITH WTP - FLUORIDE BUILDING CONDUIT AND CABLE SCHEDULE

CONDUIT				CABLE									
NO.	#SET	SIZE	TYPE	ROUTE	FROM	TO	NO.	TYPE	#	SIZE	GND	FROM	TO
								SE2	4-1/C	#4	#8		
C1101	-	2"	RAL	AG	FLE-MCC-001	FLE-JB-001						FLE-MCC-001	FLU-PDP-001
C1101A	-	2"	RAL/RGS	AG/BG	FLE-JB-001	EXISTING HH-7						PREVIOUSLY DEFINED	
C1101B	-	2"	40PVC	BG	EXISTING HH-7	FLU-HH-12						PREVIOUSLY DEFINED	
C1101C	-	2"	40PVC	BG	EXISTING HH-7	FLU-HH-13						PREVIOUSLY DEFINED	
C1101D	-	2"	RGS	AG/BG	FLU-HH-13	FLU-PDP-001						PREVIOUSLY DEFINED	
C1102	2	2"	40PVC	BG	EXISTING HH-7	FLU-HH-12						EMPTY CONDUIT	
C1103	2	2"	40PVC	AG/BG	FLU-HH-12	FLU-HH-13						EMPTY CONDUIT	
C1103A	2	2"	RGS	AG/BG	FLU-HH-13	FLUORIDE BLDG STUB-UP						EMPTY CONDUIT	
C1104	-	2"	RAL	AG	FLE-JB-001	EXISTING 2" STUB-UP						EMPTY CONDUIT	
C1105	-	3"	RAL	AG	FLE-JB-001	EXISTING 3" STUB-UP						EMPTY CONDUIT	
C1111	-	3/4"	RAL	AG	FLU-PDP-001	FLU-XF-001	P-FLUPDP001-1	SVN3	3-1/C	#10	#12	FLU-PDP-001	FLU-XF-001
C1112	-	3/4"	RAL	AG	FLU-PDP-001	FLU-MS-001	P-FLUPDP001-2	SVN3	3-1/C	#12	#12	FLU-PDP-001	FLU-MS-001
C1112A	-	3/4"	RAL/CRGS	AG	FLU-MS-001	FLU-TP-001	P-FLUPDP001-2A	SVN3	3-1/C	#12	#12	FLU-MS-001	FLU-TP-001
C1113	-	3/4"	RAL	AG	FLU-PDP-001	FLU-WH-001	P-FLUPDP001-7	SVN3	3-1/C	#10	#12	FLU-PDP-001	FLU-WH-001
C1200	-	1 1/2"	RAL	AG	FLU-XF-001	FLU-LP-001	P-FLUXF001-1	SVN3	4-1/C	#4	#8	FLU-XF-001	FLU-LP-001
C1201	-	3/4"	RAL	AG	FLU-LP-001	EXTERIOR RECEPTACLES	P-FLULP001-1	SVN3	2-1/C	#12	#12	FLU-LP-001	EXTERIOR RECEPTACLES
C1202	-	3/4"	RAL	AG	FLU-LP-001	ELEC RM RECEPTACLES	P-FLULP001-2	SVN3	2-1/C	#12	#12	FLU-LP-001	ELEC RM RECEPTACLES
C1203	-	3/4"	RAL	AG	FLU-LP-001	FLU-LCP-001	P-FLULP001-3	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-LCP-001
C1204	-	3/4"	RAL/CRGS	AG	FLU-LP-001	FLUOR RM RECEPTACLES	P-FLULP001-4	SVN3	2-1/C	#12	#12	FLU-LP-001	FLUOR RM RECEPTACLES
C1205	-	3/4"	RAL/CRGS	AG	FLU-LP-001	FLU-CMS-001	P-FLULP001-5	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-CMS-001
C1206	-	3/4"	RAL/CRGS	AG	FLU-LP-001	INTERIOR LIGHTS	P-FLULP001-6	SVN3	2-1/C	#12	#12	FLU-LP-001	INTERIOR LIGHTS
C1207A	-	3/4"	RAL	AG	FLU-LP-001	FLU-LC-001	P-FLULP001-7A	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-LC-001
C1207B	-	3/4"	RAL	AG	FLU-LC-001	EXTERIOR LIGHTS	P-FLULP001-7B	SVN3	2-1/C	#12	#12	FLU-LC-001	EXTERIOR LIGHTS
C1208	-	3/4"	RAL	AG	FLU-LP-001	FLU-ACP-001	P-FLULP001-8	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-ACP-001
C1209	-	3/4"	RAL	AG	FLU-LP-001	FLU-EUH-001	P-FLULP001-9	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-EUH-001
C1210	-	3/4"	RAL	AG	FLU-LP-001	FLU-EUH-002	P-FLULP001-10	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-EUH-002
C1211	-	3/4"	RAL	AG	FLU-LP-001	FLU-TCP-001	P-FLULP001-13	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-TCP-001
C1212	-	3/4"	RAL/CRGS	AG	FLU-LP-001	FLU-WIT-002	P-FLULP001-15	SVN3	2-1/C	#12	#12	FLU-LP-001	FLU-WIT-002
C1220	-	3/4"	RAL	AG	FBS-LP-001/FBS-MCC-001	FLU-AIT-001 RECEPTACLE	P-FBSLP001-7	SVN3	2-1/C	#12	#12	FBS-LP-001/FBS-MCC-001	FLU-AIT-001 RECEPTACLE
C1301	-	1 1/2"	RAL/CRGS	AG	FLU-LCP-001	FLU-CMS-001	C-FLUM001-1	CEV1	7/C	#14	#14	FLU-LCP-001	FLU-CMS-001
C1302	-	3/4"	RAL	AG	FLU-LCP-001	FLU-FS-001	C-FLUM002-1	CEV1	7/C	#14	#14	FLU-LCP-001	FLU-FS-001
C1303	-	3/4"	RAL	AG	FLU-LC-001	FLU-PHC-001	C-FLUPHC001-1	CEV1	3/C	#14	#14	FLU-LC-001	FLU-PHC-001
C1304	-	3/4"	RAL/CRGS	AG	FLU-MS-001	FLU-CST-001	C-FLUCST001-1	CEV1	3/C	#14	#14	FLU-MS-001	FLU-CST-001
C1305	-	3/4"	RAL/CRGS	AG	FLU-MS-001	FLU-LCP-001	C-FLUTCP001-1	CEV1	7/C	#14	#14	FLU-MS-001	FLU-LCP-001
C1306	-	3/4"	CRGS	AG/BG	FLU-LCP-001	FLU-LI-001	C-FLULI001-1	CEV1	3/C	#14	#14	FLU-LCP-001	FLU-LI-001
C1310	-	3/4"	RAL/CRGS	AG	FLU-TCP-001	FLU-T-001	C-FLUT001-1	SVN3	2-1/C	#14	#14	FLU-TCP-001	FLU-T-001
C1311	-	3/4"	RAL/CRGS	AG	FLU-TCP-001	FLU-CD-001	C-FLUCD001-1	SVN3	2-1/C	#14	#14	FLU-TCP-001	FLU-CD-001
C1312	-	3/4"	RAL/CRGS	AG	FLU-TCP-001	FLU-LS-001	C-FLULS001-1	SVN3	2-1/C	#14	#14	FLU-TCP-001	FLU-LS-001
C1313	-	3/4"	RAL	AG	FLU-TCP-001	FLU-T-003	C-FLUT003-1	SVN3	2-1/C	#14	#14	FLU-TCP-001	FLU-T-003
C1314	-	3/4"	RAL	AG	FLU-TCP-001	FLU-CD-003	C-FLUCD003-1	SVN3	2-1/C	#14	#14	FLU-TCP-001	FLU-CD-003
C1315	-	3/4"	RAL	AG	FLU-TCP-001	FLU-EF-002	P-FLUEF002-1	SVN3	3-1/C	#12	#12	FLU-TCP-001	FLU-EF-002
C1320	-	3/4"	RAL	AG	FLU-LCP-001	FLU-ACP-001	C-FLUACP001-1	CEV1	7/C	#14	#14	FLU-LCP-001	FLU-ACP-001
C1501	-	1"	RAL/CRGS	AG	FLU-LCP-001	FLU-CMS-001	I-FLUM001-1	IVV1	1-TSP	#18	#18	FLU-LCP-001	FLU-CMS-001
C1510	-	3/4"	CRGS	AG/BG	FLU-LCP-001	FLU-JB-001	I-FLULIT001-1	IVV1	1-TSP	#18	#18	FLU-LCP-001	FLU-LIT-001
C1511	-	3/4"	CRGS	AG/BG	FLU-JB-001/FLU-LIT-001	FLU-LE-001	I-FLULE001-1	MANUFACTURER SUPPLIED CABLE				FLU-LIT-001	FLU-LE-001
C1512	-	3/4"	RAL/CRGS	AG	FLU-LCP-001	FLU-WIT-002	I-FLUWIT002-1	IVV1	1-TSP	#18	#18	FLU-LCP-001	FLU-WIT-002
C1513	-	3/4"	RAL/CRGS	AG	FLU-LCP-001	FLU-LS-001	I-FLULS001-1	IVV1	2-TSP	#18	#18	FLU-LCP-001	FLU-LS-001
C1520	-	3/4"	RAL	AG	FBS-PLC-001/FBS-MCC-001	FLU-AIT-001	I-FLUAIT001-1	IVV1	1-TSP	#18	#18	FBS-PLC-001/FBS-MCC-001	FLU-AIT-001
C1530	-	3/4"	CRGS	AG	FLU-WIT-002	FLU-WE-002	I-FLUWE002-1	MANUFACTURER SUPPLIED CABLE				FLU-WIT-002	FLU-WE-002
C1701	-	2"	RAL	AG	EXISTING FLE-FOP-001	FLE-FOP-002	F-FLULCP001-1A	FIBER	JUMPER			EXISTING FLE-FOP-001	FLE-FOP-002
C1702	-	2"	RAL	AG	EXISTING FLE-FOP-001	FLE-JB-001	F-FLULCP001-1B	FIBER	6 FIBER			EXISTING FLE-FOP-001	FLU-FOP-001
C1703	-	2"	RAL/RGS	AG/BG	FLE-JB-001	EXISTING HH-7						PREVIOUSLY DEFINED	
C1703A	-	2"	40PVC	BG	EXISTING HH-7	FLU-HH-12						PREVIOUSLY DEFINED	
C1703B	-	2"	40PVC	BG	FLU-HH-12	FLU-HH-13						PREVIOUSLY DEFINED	
C1703C	-	2"	RAL/RGS	AG/BG	FLU-HH-13	FLU-LCP-001						PREVIOUSLY DEFINED	
C1705	-	3/4"	RAL	AG	FLU-LCP-001	FLU-ACP-001	T-FLUACP001-1	CAT6				FLU-SW-001	FLU-ACP-001

LAKE FORT SMITH WTP - EAST FILTER BUILDING ONE-LINE DIAGRAM

PANELBOARD FLU-PDP-001 480Y/277 VOLTS 3 PHASE 4 WIRE 100 AMP. MAINS

50 AMP. MAIN BKR. 18,000 SYM. A.I.C. MIN. WALL MOUNTED

POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	LOAD - VA	POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	
					Ø A	Ø B	Ø C				
1					2512	2	2	20	12	FLU-MS-001/FLU-TP-001	
3	1	25	10	TRANSFORMER FLU-XF-001 (15KVA)	942	4	2	20	12	FLU-MS-001/FLU-TP-001	
5					2610	6					
7					2394	8					
9	7	30	10	WATER HEATER FLU-WH-001	3000	10				SPACE	
11					6000	12				SPACE	
13						14				SPACE	
15						16				SPACE	
17						18				SPACE	
TOTAL CONNECTED LOAD:					6454	6552	9336				
33.7 AMPS (MAX Ø)					22.3 KVA						

PANELBOARD FLU-LP-001 208Y/120 VOLTS 3 PHASE 4 WIRE 100 AMP. MAINS

60 AMP. MAIN BKR. 10,000 SYM. A.I.C. MIN. WALL MOUNTED

POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	LOAD - VA	POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	
					Ø A	Ø B	Ø C				
1	1	20	12	EXTERIOR RECEPTACLE	180	2	2	20	12	ELECTRICAL ROOM RECEPTACLES	
3	3	20	12	PLC CABINET FLU-LCP-001	360	4	4	20	12	FLUORIDE ROOM RECEPTACLES	
5	5	20	12	CHEM METERING SKID FLU-CMS-001	500	6	6	20	12	INTERIOR LIGHTS	
7	7	20	12	EXTERIOR LIGHTS	330	8	8	20	12	ACCESS CONTROL FLU-ACP-001	
9	9	20	12	2KW UNIT HEATER (FLU-EUH-001)	1000	10	10	20	12	2KW UNIT HEATER (FLU-EUH-002)	
11					1000	12				ELECTRICAL RM	
13	13	20	12	FLU-EF-001/FLU-TCP-001 (FLUOR. RM)	528	14	14	20	12	FLU-EF-002/FLU-TCP-001 (ELEC RM)	
15	15	20	12	DAY TANK SCALES FLU-WIT-002	30	16		20		SPARE	
17						18		20		SPARE	
TOTAL CONNECTED LOAD:					2512	2890	2644				
24.0 AMPS (MAX Ø)					8.0 KVA						

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



BURNS & McDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. 17

date	JANUARY, 2015	detailed	J. RECKART
designed	S. TAYLOR	checked	C. HA

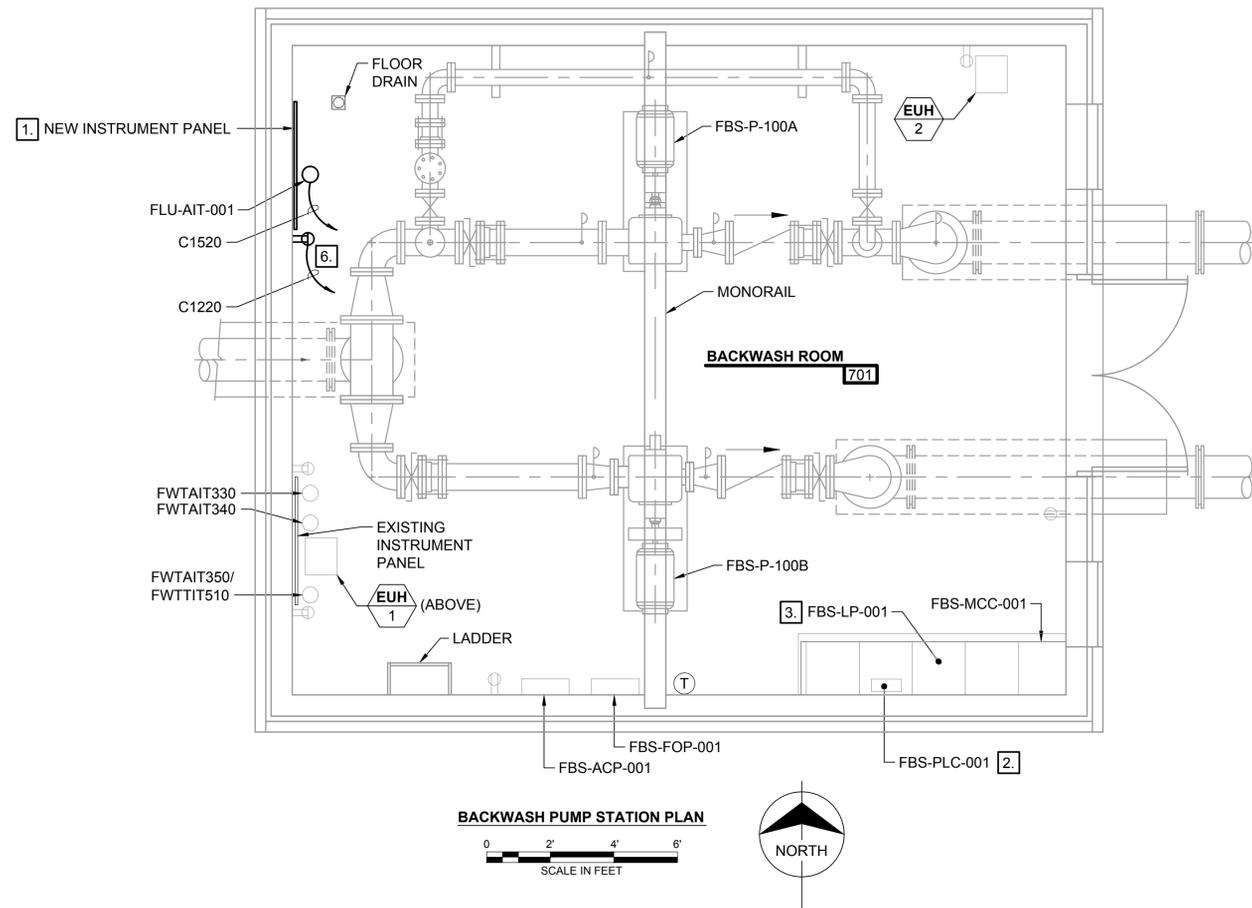
The City of Fort Smith, ARKANSAS
 LEE CREEK & LAKE FORT SMITH WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
 LAKE FORT SMITH ONE-LINE DIAGRAM AND PANELBOARD SCHEDULES

project	81174	contract	
drawing	E103	rev.	0
sheet	of	sheets	
file	81174_E103.DWG		



Copyright © 2015 Burns & McDonnell Engineering Company, Inc.
 Scale for Microminor
 Inches
 Millimeters



NOTES:

1. INSTALL NEW INSTRUMENTATION PANEL AT LOCATION SHOWN.
2. THE BACKWASH PLC CABINET (FBS-PLC-001) IS LOCATED IN SECTION 4 OF THE EXISTING MOTOR CONTROL CENTER LINEUP. UTILIZE ONE OF THE EXISTING 4 SPARE ANALOG INPUTS FOR THE NEW FLUORIDE ANALYZER (FLU-AIT-001). LAND NEW INSTRUMENT CABLING ON THE PREPARED FIELD TERMINAL BLOCKS.
3. UTILIZE SPARE 20A CIRCUIT BREAKER (POLE NO. 7) IN THE EXISTING PANELBOARD FBS-LP-001 TO SUPPLY THE NEW INSTRUMENTATION RECEPTACLE. UPDATE THE PANELBOARD SCHEDULE AS REQUIRED.
4. PIPING DETAILS FOR NEW INSTRUMENT PANEL ARE SHOWN ON DETAIL 1 ON DRAWING D003.
5. REFER TO DRAWING E103 FOR CABLE AND CONDUIT SCHEDULE.
6. MOUNT RECEPTACLE ADJACENT TO INSTRUMENT PANEL AT 4'-0" AFF.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID

Scale for Microfitting
Millimeters
Inches

A
B
C
D
E
F
G
H
I
J



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	MARCH, 2015	detailed	S. TAYLOR
designed	S. TAYLOR	checked	C. HA

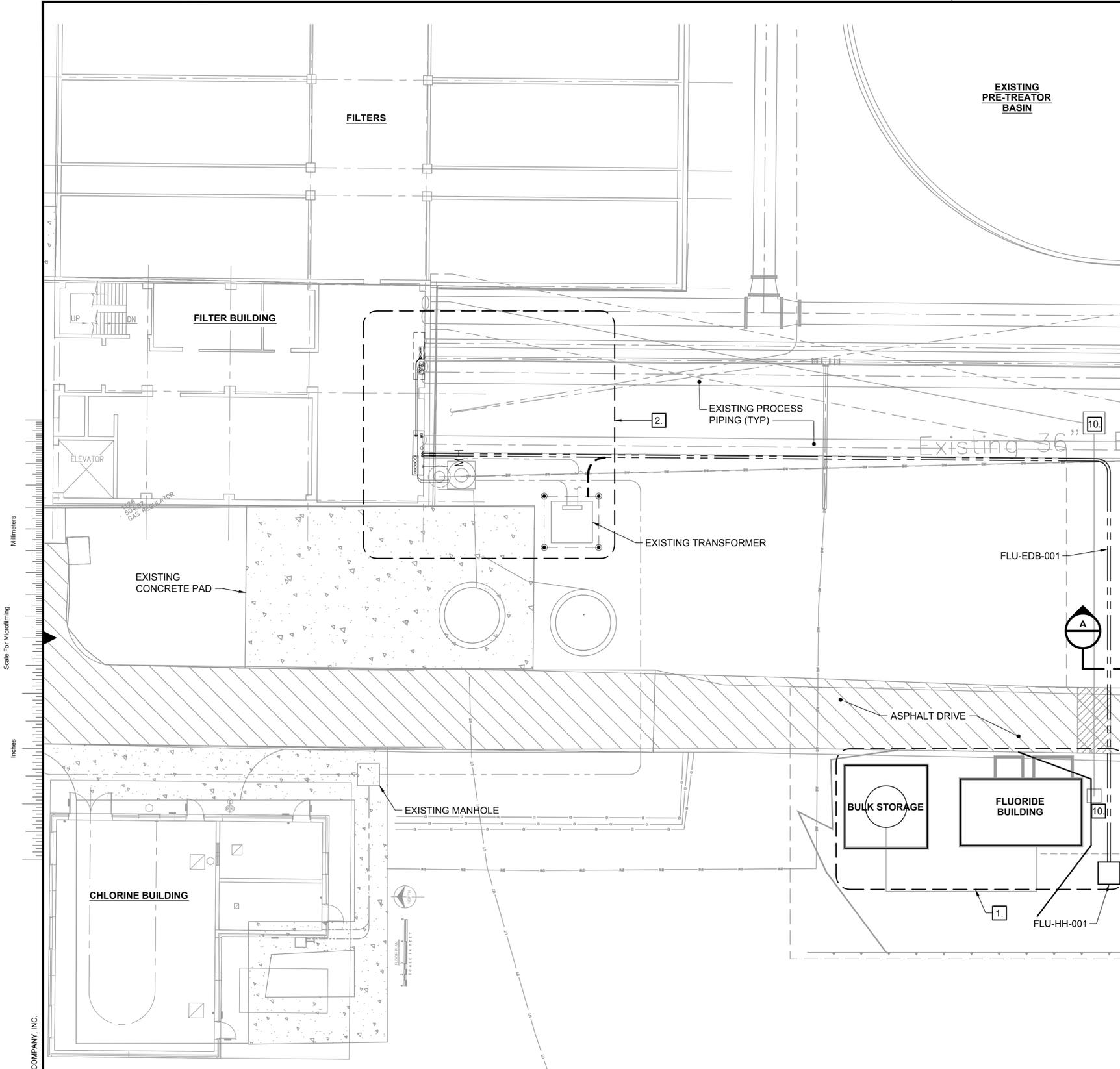


LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
BACKWASH PUMP STATION
ELECTRICAL PLANS

project	81174	contract	
drawing	E104	rev.	0
sheet	of	sheets	
file	81174_E104.DWG		



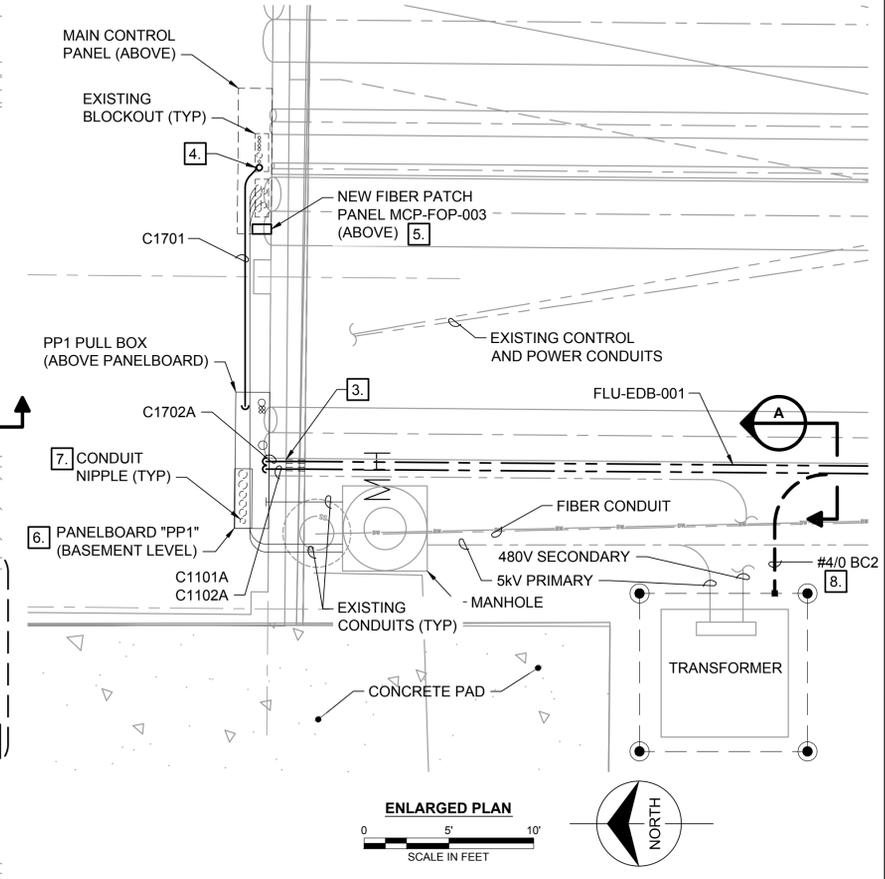


Scale For Microfitting
Millimeters
Scale For Microfitting
Inches

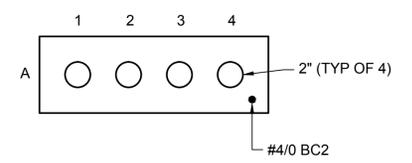


ELECTRICAL SITE PLAN
SCALE IN FEET

- NOTES:**
- REFER TO DRAWING E202 FOR ENLARGED ELECTRICAL PLAN
 - REFER TO ENLARGED PLAN THIS SHEET.
 - NEW CONDUITS SHALL PENETRATE THE EXTERIOR CONCRETE WALL ABOVE THE EXISTING PULL BOX AND TERMINATE IN THE EXISTING PULL BOX AS INDICATED. NEW DUCTBANK TO FLUORIDE BUILDING SHALL BE INSTALLED ABOVE ANY EXISTING CONDUITS AND DUCTBANK IN THIS AREA TO AVOID CONFLICT. CONTRACTOR SHALL IDENTIFY AND LOCATE ALL EXISTING CONDUITS AND UTILITIES IN THIS AREA PRIOR TO TRENCHING. DUCTBANK CONDUIT SHALL TRANSITION TO RIGID GALVANIZED STEEL PRIOR TO PENETRATING BUILDING WALL. PROVIDE WALL ENTRANCE SEALS AS SPECIFIED.
 - ROUTE NEW FIBER CONDUIT FROM THE EXISTING PULL BOX IN THE BASEMENT LEVEL TO THE MAIN CONTROL PANEL AS INDICATED. THE EXISTING BLOCKOUT IN THE BOTTOM OF THE MAIN CONTROL PANEL SHALL BE UTILIZED FOR THE NEW CONDUIT.
 - INSTALL NEW 12-PORT FIBER PATCH PANEL IN THE MAIN CONTROL PANEL. NEW FIBER PATCH PANEL SHALL BE MOUNTED ABOVE OR BELOW THE EXISTING RAW WATER AND FINISHED WATER FIBER PATCH PANELS.
 - PROVIDE AND INSTALL A NEW 30A, 3-POLE BREAKER IN THE EXISTING I-LINE PANELBOARD AVAILABLE SPACE. UPDATE PANELBOARD SCHEDULE AND LABEL THE NEW BREAKER AS REQUIRED.
 - INSTALL THE NEW POWER CONDUCTORS THROUGH THE EXISTING CONDUIT NIPPLE BETWEEN THE EXISTING PULL BOX AND EXISTING PANELBOARD PP1.
 - CONNECT NEW GROUNDING CONDUCTOR TO EXISTING GROUND GRID AT APPROXIMATE LOCATION SHOWN AND EXTEND TO THE NEW FLUORIDE BUILDING AS INDICATED.
 - SPECIFIED COORDINATE FOR HANDHOLE IS FOR TOP-LEFT CORNER OF HANDHOLE.
 - COORDINATE INSTALLATION AND ROUTING OF INDICATED ELECTRICAL HANDHOLE AND DUCTBANK WITH NEW CHEMICAL INJECTION LINES AND ASSOCIATED HANDHOLES. REFER TO DRAWING D203.



ENLARGED PLAN
SCALE IN FEET



SECTION - FLU-EDB-1
NOT TO SCALE

HAND HOLE SCHEDULE			
NO.	NORTHING EASTING	INNER DIMENSIONS	TOP OF HH ELEV.
FLU-HH-001	N 9027.486 E 9482.475	4' X 4' X 3'	500.35

DUCT SCHEDULE FLU-EDB-001	
DUCT (ROW x COLUMN)	CIRCUIT DESCRIPTION
A1	P-PP1-5
A2	F-FLULCP001-1
A3	SPARE
A4	SPARE

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	designed	detailed
JANUARY, 2015	S. TAYLOR	J. RECKART
checked		
C. HA		

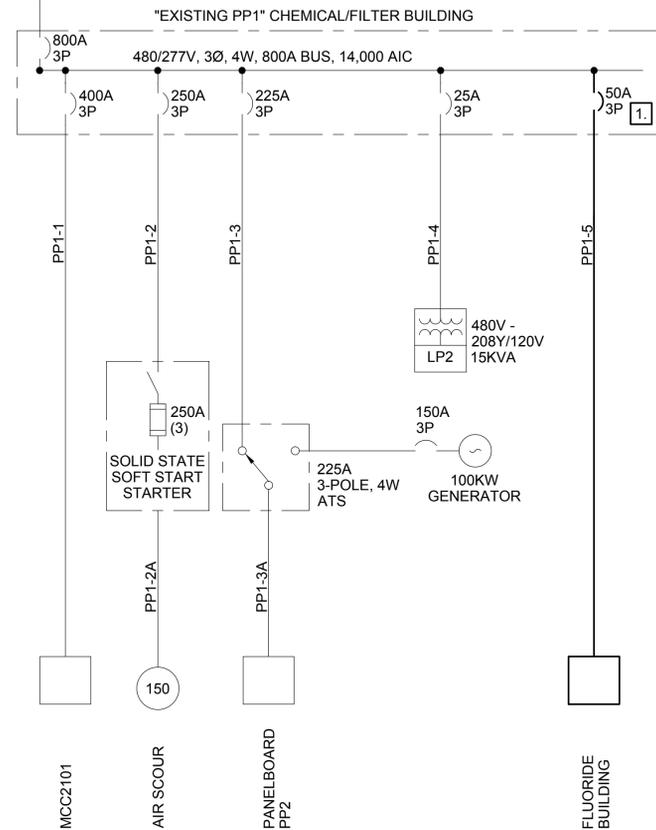


LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS	
LEE CREEK	
ELECTRICAL SITE PLAN	
project	contract
81174	
drawing	rev.
E201	0
sheet	of sheets
file 81174_E201.DWG	

COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

TO CHEMICAL/FILTER BUILDING XFMR
2-(4-#500 KCMIL, #2/0 GND, 4°C)



LEE CREEK WTP - CHEMICAL BUILDING ONE-LINE DIAGRAM

PANELBOARD FLU-PDP-001 480Y/277 VOLTS 3 PHASE 4 WIRE 100 AMP. MAINS												
50 AMP. MAIN BKR. 18,000 SYM. A.I.C. MIN. WALL MOUNTED												
POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	LOAD - VA	POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	LOAD - VA	
					Ø A Ø B Ø C						Ø A Ø B Ø C	
1	1	25	10	TRANSFORMER FLU-XF-001 (15kVA)	2512 942	2	2	20	12	FLU-MS-001/FLU-TP-001	2610 942	
3				SPACE		4				SPACE		
5				SPACE		6				SPACE		
7				SPACE		8				SPACE		
9				SPACE		10				SPACE		
11				SPACE		12				SPACE		
13				SPACE		14				SPACE		
15		30		SURGE PROTECTIVE DEVICE (SPD)		16				SPACE		
17				SPACE		18				SPACE		
TOTAL CONNECTED LOAD:					3454						3552	3336
12.8 AMPS (MAX Ø)											10.3 KVA	

PANELBOARD FLU-LP-001 208Y/120 VOLTS 3 PHASE 4 WIRE 100 AMP. MAINS												
60 AMP. MAIN BKR. 10,000 SYM. A.I.C. MIN. WALL MOUNTED												
POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	LOAD - VA	POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	LOAD - VA	
					Ø A Ø B Ø C						Ø A Ø B Ø C	
1	1	20	12	EXTERIOR RECEPTACLE	180 360	2	2	20	12	ELECTRICAL ROOM RECEPTACLES		
3	3	20	12	PLC CABINET FLU-LCP-001	500 360	4	4	20	12	FLUORIDE ROOM RECEPTACLES		
5	5	20	12	CHEM METERING SKID FLU-CMS-001	100 544	6	6	20	12	INTERIOR LIGHTS		
7	7	20	12	EXTERIOR LIGHTS	330 100	8	8	20	12	ACCESS CONTROL FLU-ACP-001		
9				SPACE		10				SPACE		
9	9	20	12	2KW UNIT HEATER (FLU-EUH-001) FLUORIDE RM	1000 1000	10	10	20	12	2KW UNIT HEATER (FLU-EUH-002) ELECTRICAL RM	1000 1000	
11				SPACE		12				SPACE		
13	13	20	12	FLU-EF-003/FLU-TCP-001 (FLUOR. RM)	528 1176	14	14	20	12	FLU-EF-004/FLU-TCP-001 (ELEC RM)		
15	15	12		DAY TANK SCALES FLU-WIT-002	30	16				SPARE		
17				SPACE		18				SPACE		
TOTAL CONNECTED LOAD:					2512						2890	2644
24.0 AMPS (MAX Ø)											8.0 KVA	

LEE CREEK WTP - FLUORIDE BUILDING CONDUIT AND CABLE SCHEDULE											
CONDUIT						CABLE					
NO.	#SET	SIZE	TYPE	ROUTE	TO	NO.	TYPE	#	SIZE	GND	TO
C1101A	-	2"	RAL	AG	PP1 PULL BOX	FLU-EDB-001					
C1101B	-	2"	RGS	AG/BG	FLU-HH-001	FLU-PDP-001	PP1-5	SE2	4-1/C	#10	PANELBOARD PP1
C1102A	2	2"	RAL	AG	PP1 PULL BOX	FLU-EDB-001					PREVIOUSLY DEFINED
C1102B	2	2"	RGS	AG/BG	FLU-HH-001	FLUORIDE BLDG STUB-UP					EMPTY CONDUIT
C1111	-	3/4"	RAL	AG	FLU-PDP-001	FLU-XF-001	P-FLUPDP001-1	SVN3	3-1/C	#10	FLU-PDP-001
C1112	-	3/4"	RAL	AG	FLU-PDP-001	FLU-MS-001	P-FLUPDP001-2	SVN3	3-1/C	#12	FLU-PDP-001
C1112A	-	3/4"	RAL/CRGS	AG	FLU-MS-001	FLU-TP-001	P-FLUPDP001-2A	SVN3	3-1/C	#12	FLU-MS-001
C1200	-	1 1/2"	RAL	AG	FLU-XF-001	FLU-LP-001	P-FLUXF001-1	SVN3	4-1/C	#4	FLU-XF-001
C1201	-	3/4"	RAL	AG	FLU-LP-001	EXTERIOR RECEPTACLES	P-FLULP001-1	SVN3	2-1/C	#12	FLU-LP-001
C1202	-	3/4"	RAL	AG	FLU-LP-001	ELEC RM RECEPTACLES	P-FLULP001-2	SVN3	2-1/C	#12	FLU-LP-001
C1203	-	3/4"	RAL	AG	FLU-LP-001	FLU-LCP-001	P-FLULP001-3	SVN3	2-1/C	#12	FLU-LP-001
C1204	-	3/4"	RAL/CRGS	AG	FLU-LP-001	FLUOR RM RECEPTACLES	P-FLULP001-4	SVN3	2-1/C	#12	FLUOR RM RECEPTACLES
C1205	-	3/4"	RAL/CRGS	AG	FLU-LP-001	FLU-CMS-001	P-FLULP001-5	SVN3	2-1/C	#12	FLU-LP-001
C1206	-	3/4"	RAL/CRGS	AG	FLU-LP-001	INTERIOR LIGHTS	P-FLULP001-6	SVN3	2-1/C	#12	FLU-LP-001
C1207A	-	3/4"	RAL	AG	FLU-LP-001	FLU-LC-001	P-FLULP001-7A	SVN3	2-1/C	#12	FLU-LC-001
C1207B	-	3/4"	RAL	AG	FLU-LC-001	EXTERIOR LIGHTS	P-FLULP001-7B	SVN3	2-1/C	#12	FLU-LC-001
C1208	-	3/4"	RAL	AG	FLU-LP-001	FLU-ACP-001	P-FLULP001-8	SVN3	2-1/C	#12	FLU-LP-001
C1209	-	3/4"	RAL	AG	FLU-LP-001	FLU-EUH-001	P-FLULP001-9	SVN3	2-1/C	#12	FLU-LP-001
C1210	-	3/4"	RAL	AG	FLU-LP-001	FLU-EUH-002	P-FLULP001-10	SVN3	2-1/C	#12	FLU-LP-001
C1211	-	3/4"	RAL	AG	FLU-LP-001	FLU-TCP-001	P-FLULP001-11	SVN3	2-1/C	#12	FLU-LP-001
C1212	-	3/4"	RAL/CRGS	AG	FLU-LP-001	FLU-WIT-002	P-FLULP001-12	SVN3	2-1/C	#12	FLU-LP-001
C1220	-	3/4"	RAL	AG	PANEL "FL" PDB3102	FLU-AIT-001 RECEPTACLE	P-PDB3102-20	SVN3	2-1/C	#12	PANEL "FL" PDB3102
C1301	-	1 1/2"	RAL/CRGS	AG	FLU-LCP-001	FLU-CMS-001	C-FLUMP001-1	CEV1	7/C	#14	FLU-LCP-001
C1302	-	3/4"	RAL	AG	FLU-LCP-001	FLU-FS-001	C-FLUPS001-1	CEV1	3/C	#14	FLU-LCP-001
C1303	-	3/4"	RAL	AG	FLU-LC-001	FLU-PHC-001	C-FLUPHC001-1	CEV1	3/C	#14	FLU-LC-001
C1304	-	3/4"	RAL/CRGS	AG	FLU-MS-001	FLU-CST-001	C-FLUCST001-1	CEV1	3/C	#14	FLU-MS-001
C1305	-	3/4"	RAL/CRGS	AG	FLU-MS-001	FLU-LCP-001	C-FLUTP001-1	CEV1	7/C	#14	FLU-MS-001
C1306	-	3/4"	CRGS	AG/BG	FLU-LCP-001	FLU-JB-001	C-FLUJ001-1	CEV1	3/C	#14	FLU-LCP-001
C1310	-	3/4"	RAL/CRGS	AG	FLU-TCP-001	FLU-T-005	C-FLUT005-1	SVN3	2-1/C	#14	FLU-TCP-001
C1311	-	3/4"	RAL/CRGS	AG	FLU-TCP-001	FLU-CD-005	C-FLUCD005-1	SVN3	2-1/C	#14	FLU-TCP-001
C1312	-	3/4"	RAL/CRGS	AG	FLU-TCP-001	FLU-LS-005	C-FLULS005-1	SVN3	2-1/C	#14	FLU-TCP-001
C1313	-	3/4"	RAL	AG	FLU-TCP-001	FLU-CD-006	C-FLUCD006-1	SVN3	2-1/C	#14	FLU-TCP-001
C1314	-	3/4"	RAL	AG	FLU-TCP-001	FLU-LS-006	C-FLULS006-1	SVN3	2-1/C	#14	FLU-TCP-001
C1315	-	3/4"	RAL	AG	FLU-TCP-001	FLU-T-003	C-FLUT003-1	SVN3	2-1/C	#14	FLU-TCP-001
C1316	-	3/4"	RAL/CRGS	AG	FLU-LCP-001	FLU-CD-007	C-FLUCD007-1	SVN3	2-1/C	#14	FLU-LCP-001
C1320	-	3/4"	RAL	AG	FLU-LCP-001	FLU-EF-004	C-FLUEF004-1	SVN3	3-1/C	#12	FLU-LCP-001
C1501	-	1"	RAL/CRGS	AG	FLU-LCP-001	FLU-CMS-001	I-FLUMP001-1	IVV1	1-TSP	#18	FLU-LCP-001
C1510	-	3/4"	CRGS	AG/BG	FLU-LCP-001	FLU-JB-001	I-FLULJ001-1	IVV1	1-TSP	#18	FLU-LCP-001
C1511	-	3/4"	CRGS	AG/BG	FLU-LCP-001	FLU-LIT-001	I-FLULLE001-1				MANUFACTURER SUPPLIED CABLE
C1512	-	3/4"	RAL/CRGS	AG	FLU-LCP-001	FLU-WIT-002	I-FLUWIT002-1	IVV1	1-TSP	#18	FLU-LCP-001
C1513	-	3/4"	RAL/CRGS	AG	FLU-LCP-001	FLU-LS-001	I-FLULS001-1	IVV1	2-TSP	#18	FLU-LCP-001
C1520	-	3/4"	RAL	AG	FW CONTROL PANEL	FLU-AIT-001	I-FLUAIT001-1	IVV1	1-TSP	#18	FW CONTROL PANEL
C1530	-	3/4"	CRGS	AG	FLU-WIT-002	FLU-WE-002	I-FLUWE002-1				MANUFACTURER SUPPLIED CABLE
C1701	-	2"	RAL	AG	EXISTING MCP	PP1 PULL BOX					FIBER 6 FIBER
C1702A	-	2"	RAL	AG	PP1 PULL BOX	FLU-EDB-001	F-FLULCP001-1				PREVIOUSLY DEFINED
C1702B	-	2"	RGS	AG/BG	FLU-HH-001	FLU-LCP-001					PREVIOUSLY DEFINED
C1705	-	3/4"	RAL	AG	FLU-LCP-001	FLU-ACP-001	T-FLUACP001-1	CAT6			FLU-SW-001

NOTES:
1. INSTALL NEW CIRCUIT BREAKER AS INDICATED IN THE EXISTING SQUARE-D I-LINE PANELBOARD "PP1". RATINGS SHALL MATCH THE EXISTING PANELBOARD.

no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date JANUARY, 2015
designed S. TAYLOR
checked J. RECKART
C. HA



FLUORIDE FEED SYSTEMS
LEE CREEK
ONE-LINE DIAGRAM AND
PANELBOARD SCHEDULES

project 81174
drawing E203
sheet of sheets
file 81174_E203.DWG

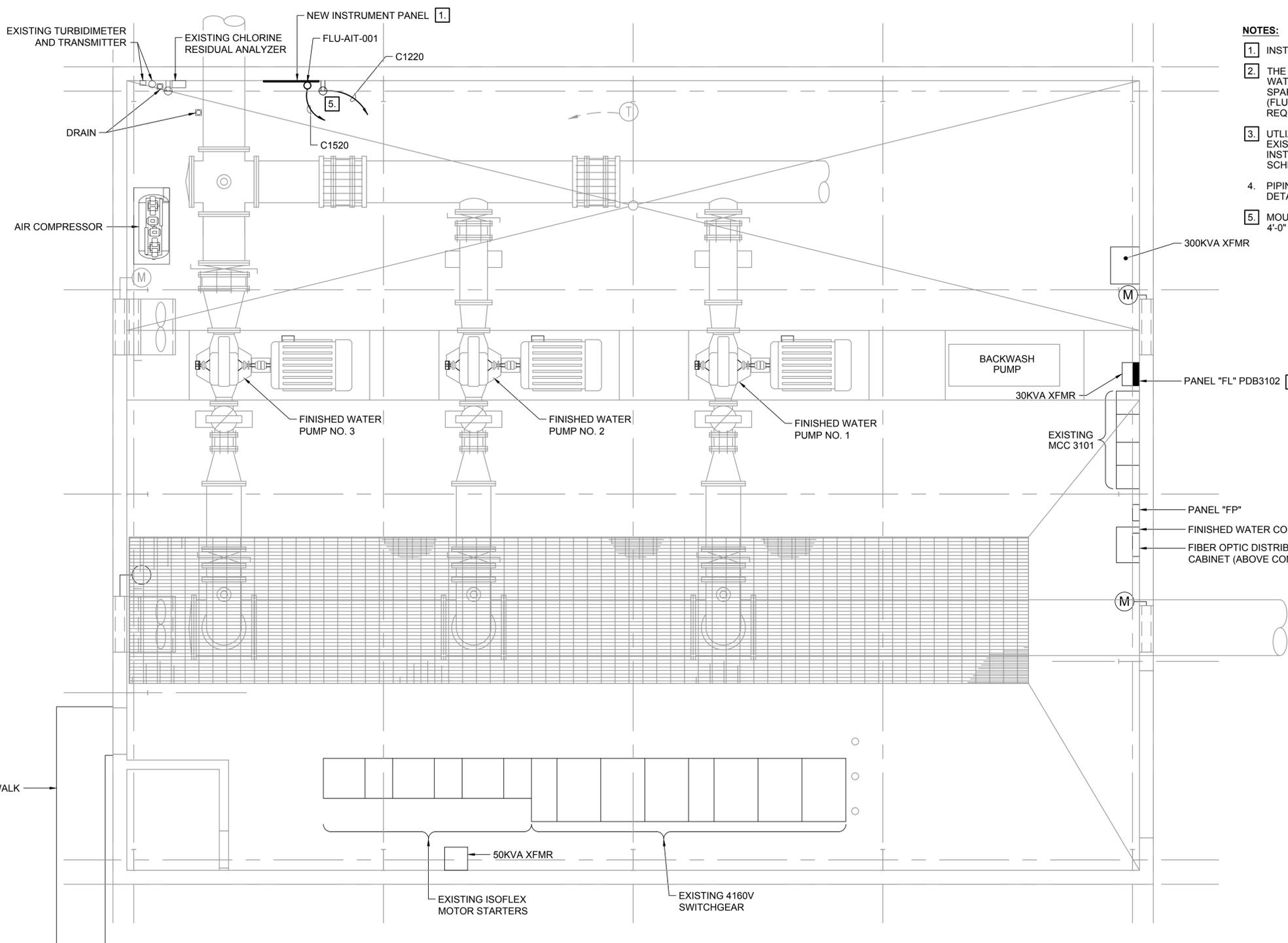


Scale For Microminim

Inches

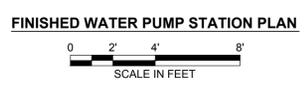
COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

1 2 3 4 5 6 7 8 9 10 11 12 13 14



- NOTES:**
1. INSTALL NEW INSTRUMENTATION PANEL AT LOCATION SHOWN.
 2. THE FINISHED WATER PLC IS LOCATED IN THE FINISHED WATER CONTROL PANEL. UTILIZE ONE OF THE EXISTING SPARE ANALOG INPUTS FOR THE NEW FLUORIDE ANALYZER (FLU-AIT-001). PROVIDE NEW FIELD TERMINAL BLOCKS AS REQUIRED.
 3. UTILIZE SPARE 20A CIRCUIT BREAKER (POLE NO. 20) IN THE EXISTING PANELBOARD "FL" (PBD3102) TO SUPPLY THE NEW INSTRUMENTATION RECEPTACLE. UPDATE THE PANELBOARD SCHEDULE AS REQUIRED.
 4. PIPING DETAILS FOR NEW INSTRUMENT PANEL ARE SHOWN ON DETAIL 1 ON DRAWING D003.
 5. MOUNT RECEPTACLE ADJACENT TO INSTRUMENT PANEL AT 4'-0" AFF.

Scale for Microfitting
Millimeters
Inches



no.	date	by	ckd	description
0	06/14/15	DLB	MJO	ISSUED FOR BID



**BURNS
MCDONNELL**

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. 17

date	MARCH, 2015	detailed	J. RECKART
designed	S. TAYLOR	checked	C. HA



LEE CREEK & LAKE FORT SMITH
WATER TREATMENT PLANTS

FLUORIDE FEED SYSTEMS
FINISHED WATER PUMP STATION
ELECTRICAL PLAN

project	81174	contract	
drawing	E204	rev.	0
sheet	of	sheets	
file	81174_E204.DWG		



COPYRIGHT © 2015 BURNS & MCDONNELL ENGINEERING COMPANY, INC.