

J-1 IDENTIFICATION LETTERS				
FIRST LETTER		SUCCEEDING LETTERS		
MEASURED OR INDICATING VARIABLE	MODIFIER	READOUT OR FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALOG			
B	BURNER/COMBUSTION	USER'S CHECK	USER'S CHECK	USER'S CHECK
C	CHECK		CONTROL	
D	DENSITY			
E	DIFFERENTIAL			
F	FLOW RATE	SECONDARY ELEMENT		
G	GRAVITY			
H	HIGH			
I	INDICATOR			
J	JUNCTION			
K	CONTROL STATION			
L	LINE			
M	MULTIFUNCTION	USER'S CHECK	USER'S CHECK	USER'S CHECK
N	NOISE			
O	ORIGIN			
P	POSITION			
Q	QUALITY			
R	RANGE			
S	SAFETY			
T	TEMPERATURE			
U	UNCLASIFIED			
V	VIBRATION			
W	WATER			
X	X AXIS			
Y	Y AXIS			
Z	Z AXIS			

GENERAL PURPOSE SYMBOLS	FIELD MOUNTED	PRIMARY LOCATIONS ACCESSIBLE TO OPERATOR	SECONDARY LOCATIONS ACCESSIBLE TO OPERATOR	NORMALLY MOUNTED IN CONTROL ROOM
DISCRETE INSTRUMENT	○	○	○	○
SHIELD SHOWN	○	○	○	○
SHIELD CONTROL	○	○	○	○
COMPUTER FUNCTION	○	○	○	○
PROGRAMMABLE LOGIC CONTROL	○	○	○	○
PLC INPUT/OUTPUT	△	▽	△	▽

J-4 INSTRUMENT MODIFIER
1/2 SELECT 1 OF 2 POSITION
1/3 SELECT 1 OF 3 POSITION
1/4 SELECT 1 OF 4 POSITION
1/5 SELECT 1 OF 5 POSITION
1/6 SELECT 1 OF 6 POSITION
1/7 SELECT 1 OF 7 POSITION
1/8 SELECT 1 OF 8 POSITION
1/9 SELECT 1 OF 9 POSITION
1/10 SELECT 1 OF 10 POSITION
1/11 SELECT 1 OF 11 POSITION
1/12 SELECT 1 OF 12 POSITION
1/13 SELECT 1 OF 13 POSITION
1/14 SELECT 1 OF 14 POSITION
1/15 SELECT 1 OF 15 POSITION
1/16 SELECT 1 OF 16 POSITION
1/17 SELECT 1 OF 17 POSITION
1/18 SELECT 1 OF 18 POSITION
1/19 SELECT 1 OF 19 POSITION
1/20 SELECT 1 OF 20 POSITION
1/21 SELECT 1 OF 21 POSITION
1/22 SELECT 1 OF 22 POSITION
1/23 SELECT 1 OF 23 POSITION
1/24 SELECT 1 OF 24 POSITION
1/25 SELECT 1 OF 25 POSITION
1/26 SELECT 1 OF 26 POSITION
1/27 SELECT 1 OF 27 POSITION
1/28 SELECT 1 OF 28 POSITION
1/29 SELECT 1 OF 29 POSITION
1/30 SELECT 1 OF 30 POSITION

INSTRUMENT SYMBOL IDENTIFIERS	
	1-1 IDENTIFICATION LETTERS (SEE TABLE ABOVE)
	1-2 LOOP NUMBER
	1-3 DEVICE SEQUENCE LETTER
	1-4 INSTRUMENT MODIFIER

J-30 LINES
——— MAIN PROCESS FLOW (WITH TYPICAL DIRECTION OF FLOW)
——— MAIN (EXISTING)
——— SECONDARY PROCESS FLOW
——— SECONDARY (EXISTING)
——— INSTRUMENT SUPPLY PROCESS FLOW
——— PNEUMATIC SIGNAL
——— ANALOG ELECTRIC SIGNAL
——— DISCRETE ELECTRIC SIGNAL
——— CAPILLARY TUBE OR FILLED SYSTEM
——— ELECTROMAGNETIC OF SONIC SIGNAL (UNSHOULDER)
——— SOFTWARE OR DATA LINK
——— MECHANICAL
——— HYDRAULIC
——— POWER SUPPLY
——— SERVICE AIR SUPPLY

FLOW PRIMARY ELEMENTS
——— ORIFICE PLATE
——— SINGLE PORT PILOT TUBE OR PILOT-ROOTER TUBE
——— AVERAGING PILOT TUBE
——— THERMAL MASS FLOWMETER
——— MAGNETIC FLOWMETER
——— TURBINE OR PROPELLER-TYPE PRIMARY ELEMENT
——— ROTAMETER
——— POSITIVE DISPLACEMENT TYPE FLOW TOTALIZING METER
——— VORTEX SENSOR
——— TARGET TYPE SENSOR
——— VELOCITY TUBE
——— SONIC FLOWMETER
——— DENSITY METER

VALVES
○ ○ DATE VALVES (2-WAY AND 3-WAY)
○ ○ GLOBE VALVE (2-WAY AND 3-WAY)
○ ○ PLUG VALVE
○ ○ ECCENTRIC PLUG VALVE
○ ○ CHECK VALVE AND BALL CHECK VALVE
○ ○ DAMPPING VALVE (PINCH VALVE)
○ ○ BUTTERFLY VALVE
○ ○ BALL VALVE (2-WAY AND 3-WAY)
○ ○ MIXTURE VALVE
○ ○ INTERLOCK
○ ○ PRESSURE HOLDING REGULATOR VALVE SELF-CLOSING
○ ○ BACK PRESSURE REGULATOR VALVE SELF-CLOSING
○ ○ SOLIDOID VALVE
○ ○ PRESSURE SURGE DISCHARGE
○ ○ CONTROL VALVE
○ ○ TELESCOPIE VALVE
○ ○ NORMALLY CLOSED
○ ○ NORMALLY OPEN

VALVE OPERATORS
○ ○ DAMPPING
○ ○ DAMPPING/PRESSURE BALANCED
○ ○ HAND
○ ○ MOTOR
○ ○ CYLINDER OPERATOR
○ ○ SOLIDOID

General Notes  
**For Earth. For Life**  
**Kubota**  
 Kubota Machinery USA Corporation  
 1387 Park Drive, Valley 5, Suite 100  
 Valley 5, PA 15767-0100  
 Tel: +1 412 351 2000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revision/Issue	Date
8	JWH: BMD	4/78
9	ISEY: MNUGRA	8/18
4	ISEY: MNUGRA	10/21
3	ISEY: MNUGRA	8/28
2	ISEY: MNUGRA	8/28
1	ISEY: MNUGRA	8/28
0	K. FOSTER	12/27
		2012

SYMBOL

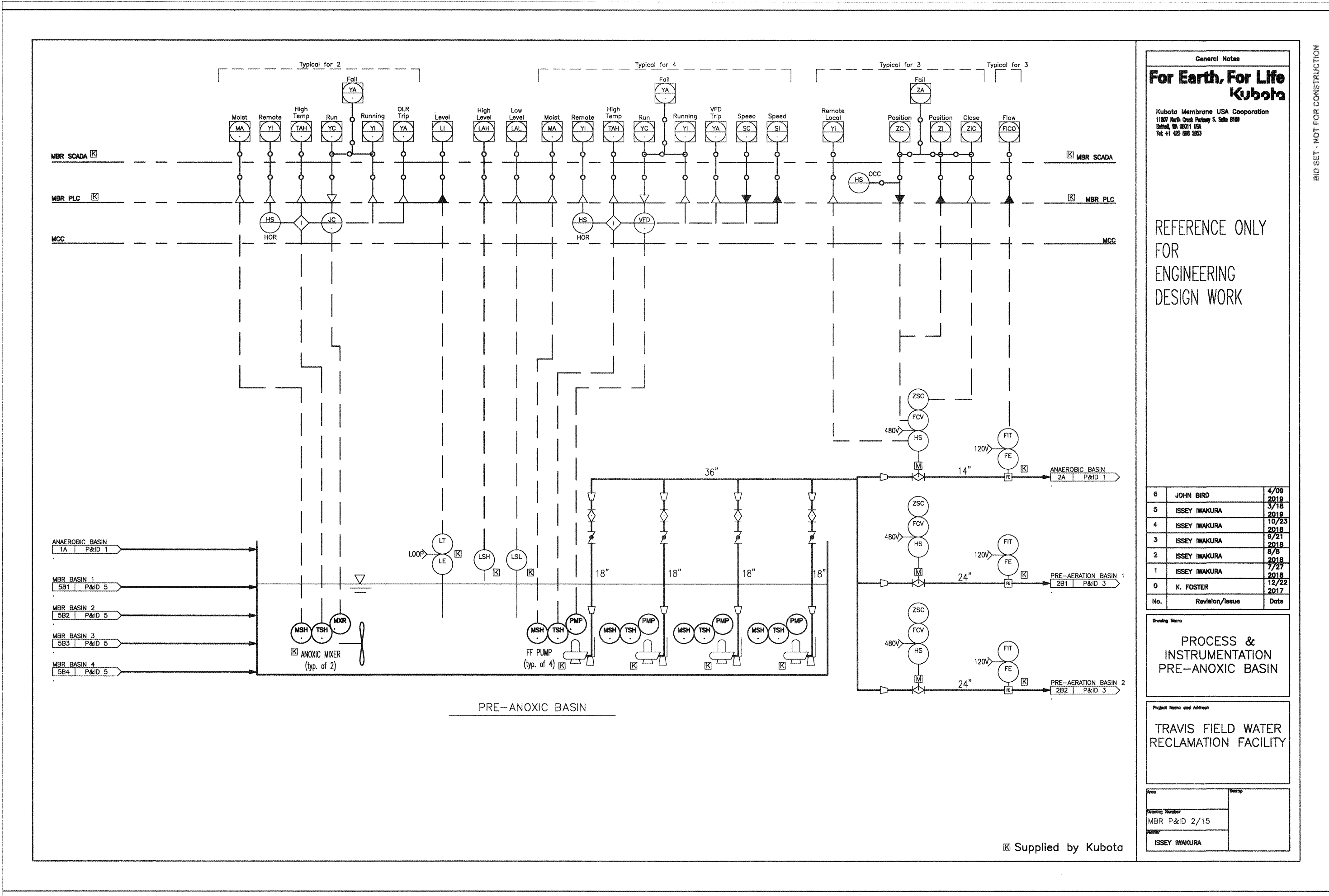
TRAVIS FIELD WATER RECLAMATION FACILITY

SYMBOL/2  
 ISEY: MNUGRA

BID SET - NOT FOR CONSTRUCTION







**For Earth. For Life**  
**Kubota**

Kubota Machinery USA Corporation  
1280 West 10th Street, Suite 100  
Wichita, KS 67203  
Tel: 316.842.8000

REFERENCE ONLY  
FOR  
ENGINEERING  
DESIGN WORK

No.	Revision/Issue	Date
8	JOHN BIRD	4/28/09
5	ESSEY IWAGURA	8/18/08
4	ESSEY IWAGURA	10/23/08
3	ESSEY IWAGURA	8/21/08
2	ESSEY IWAGURA	8/20/08
1	ESSEY IWAGURA	7/29/08
0	K. FORTER	10/22/07

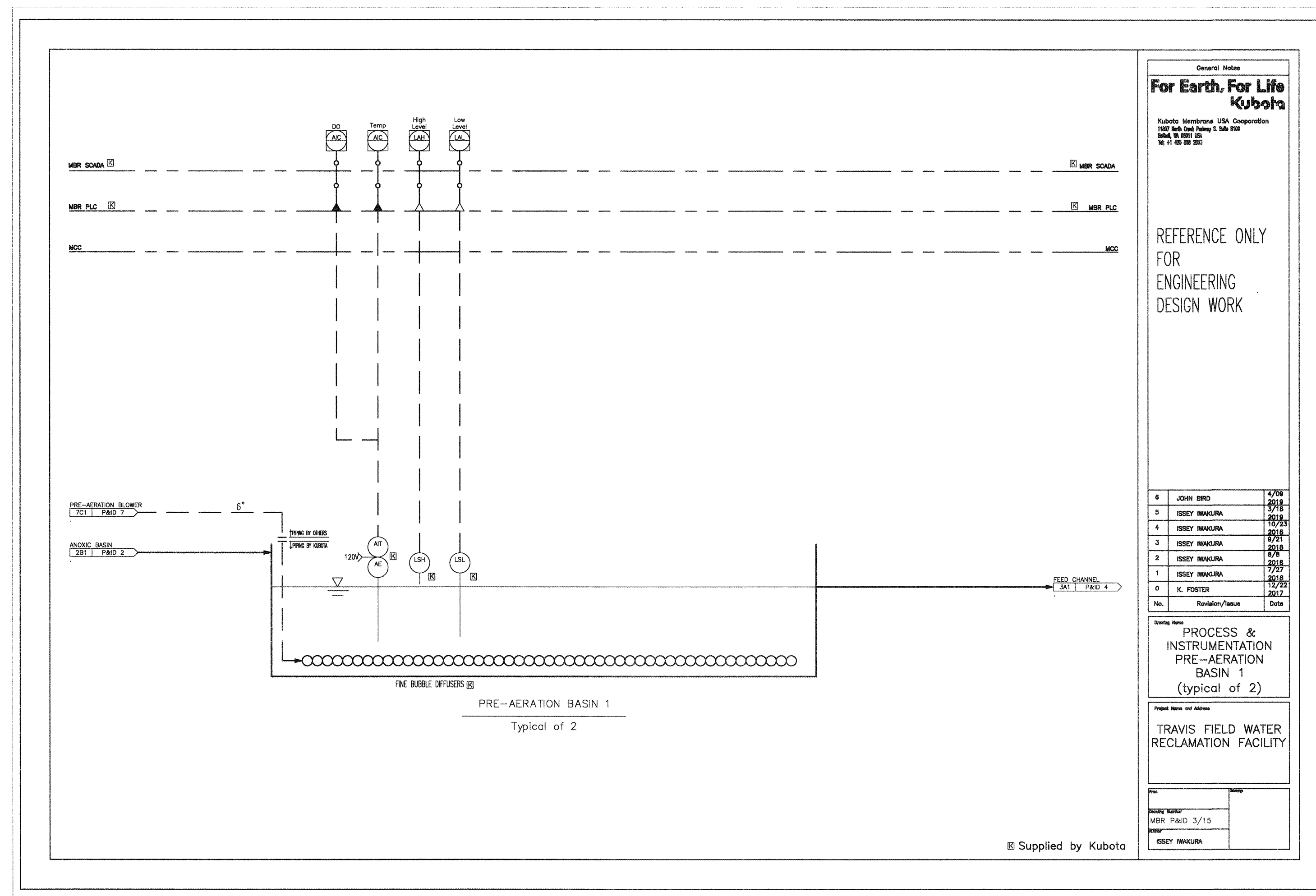
**PROCESS & INSTRUMENTATION**  
**PRE-ANOXIC BASIN**

TRAVIS FIELD WATER RECLAMATION FACILITY

NO.	DATE
ISSUED	2/15/10
BY	ESSEY IWAGURA

Supplied by Kubota

BIG SET - NOT FOR CONSTRUCTION



Kubota  
**For Earth, For Life**  
 Kubota

Kubota Membrane USA Corporation  
 1100 East 10th Street, Suite 100  
 Omaha, NE 68102-1000  
 Tel: 414.481.8800

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revisions/Issues	Date
6	JOHN BRID	2/28/15
5	ISSEY IWAGURA	3/18/15
4	ISSEY IWAGURA	10/23/14
3	ISSEY IWAGURA	10/21/14
2	ISSEY IWAGURA	9/8/14
1	ISSEY IWAGURA	7/23/14
0	K. FOSTER	12/23/13
		2017

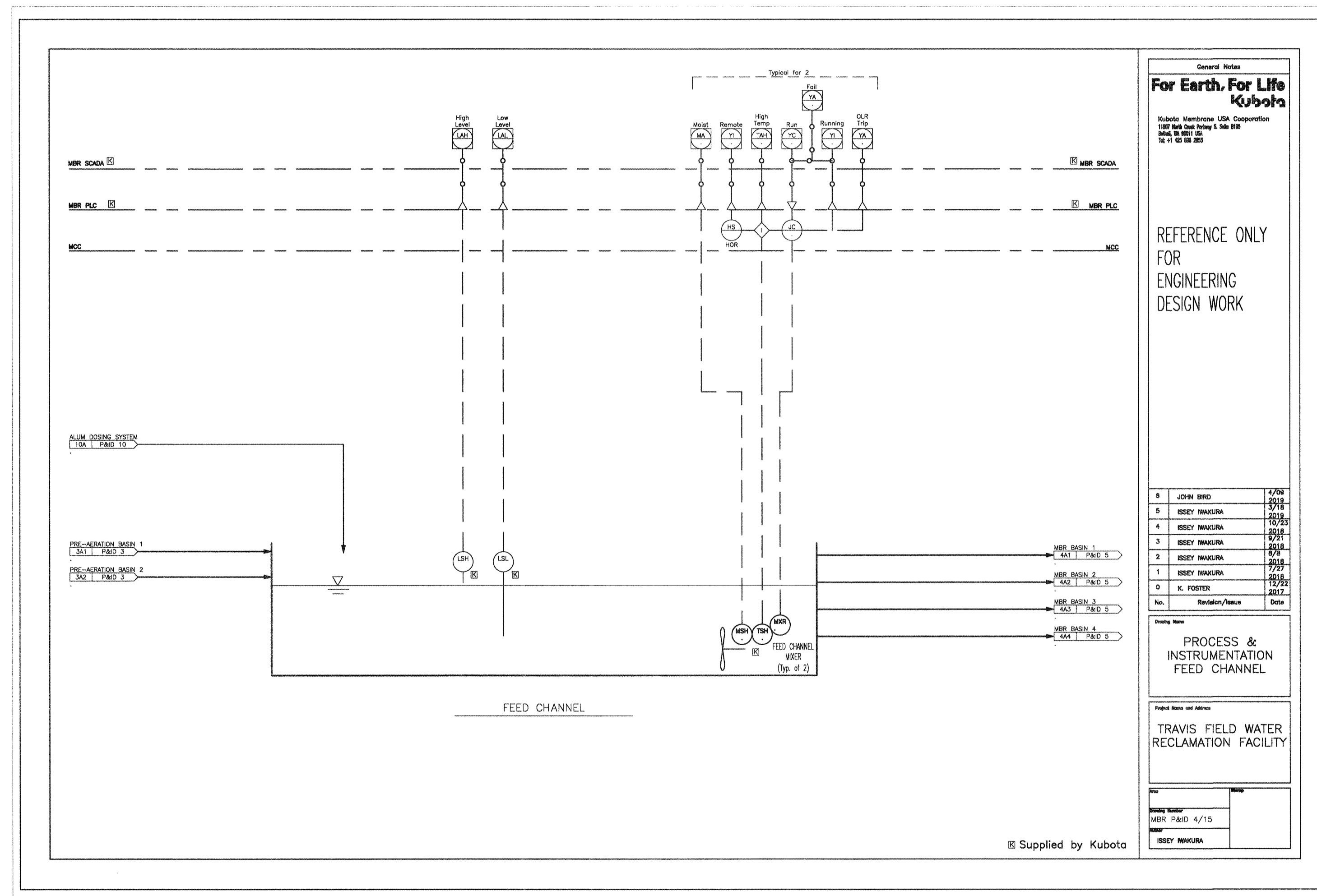
Drawing Name: PROCESS & INSTRUMENTATION PRE-AERATION BASIN 1 (typical of 2)

Project Name and Address: TRAVIS FIELD WATER RECLAMATION FACILITY

Rev	Date
ISSEY IWAGURA	
MBR P&ID 3/15	
ISSEY IWAGURA	

Supplied by Kubota

BID SET - NOT FOR CONSTRUCTION



General Notes  
**For Earth, For Life**  
**Kubota**

Kubota Membrane USA Corporation  
 1000 West 10th Street, Suite 100  
 Omaha, NE 68102 USA  
 Tel: +1 402 552 2000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revisi/Revisi	Date
0	JOURN BRID	4/15
1	ISSEY IWAGURA	2018
2	ISSEY IWAGURA	2018
3	ISSEY IWAGURA	2018
4	ISSEY IWAGURA	2018
5	ISSEY IWAGURA	2018
6	ISSEY IWAGURA	2018
7	ISSEY IWAGURA	2018
8	ISSEY IWAGURA	2018
9	K. FOSTER	2017

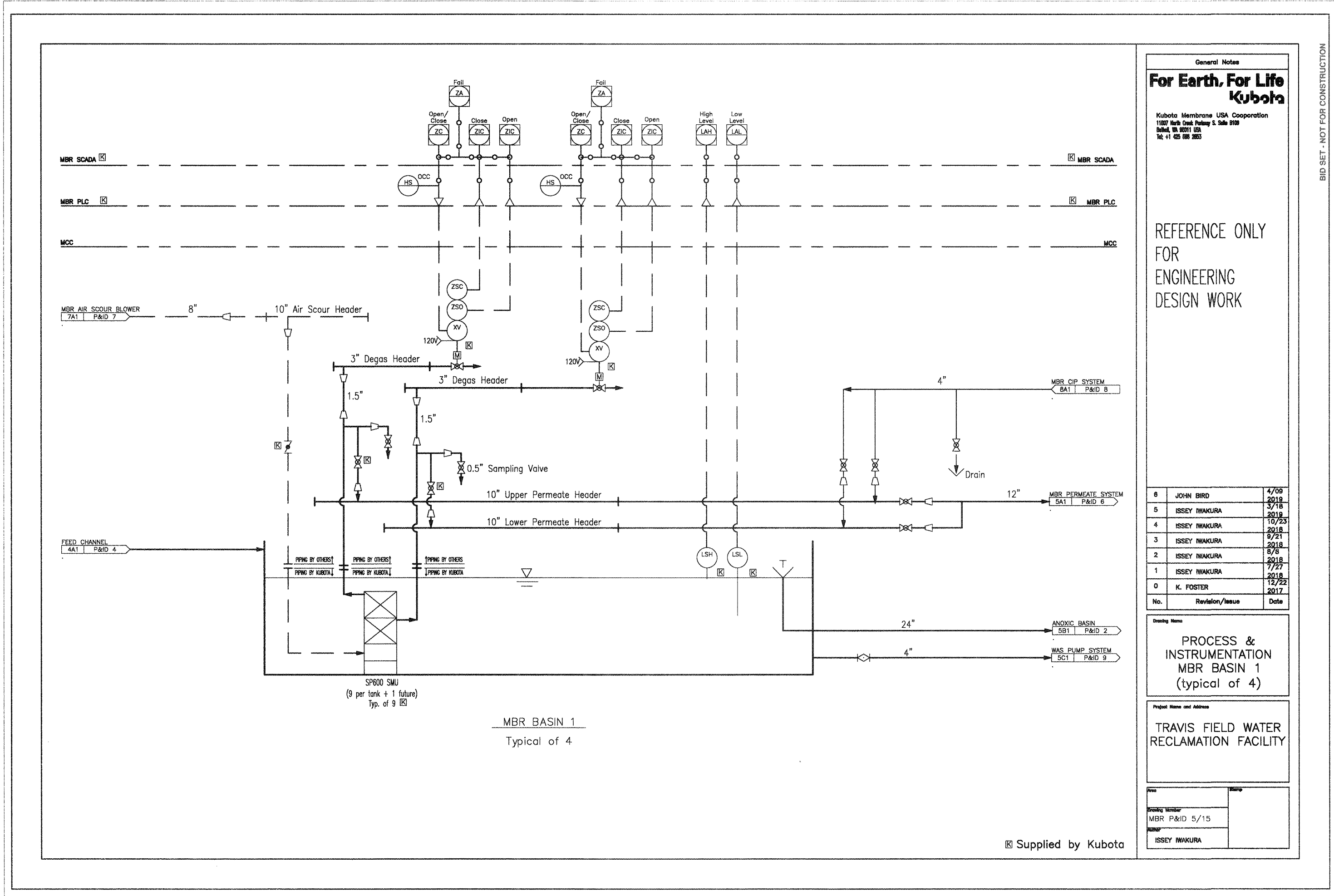
Working Name  
**PROCESS &  
 INSTRUMENTATION  
 FEED CHANNEL**

Project Name and Address  
**TRAVIS FIELD WATER  
 RECLAMATION FACILITY**

No.	Revisi
Working Number	
MBR P&ID 4/15	
Author	
ISSEY IWAGURA	

Supplied by Kubota

BIG SET - NOT FOR CONSTRUCTION



General Notes  
**For Earth, For Life**  
**Kubota**

Kubota Membrane USA Corporation  
 1000 East Main Street, Suite 100  
 Dallas, TX 75202  
 Tel: 972.982.2000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revisions/Issues	Date
6	JOHN BRID	4/20
5	ISSEY IWAKURA	5/15
4	ISSEY IWAKURA	5/25
3	ISSEY IWAKURA	5/25
2	ISSEY IWAKURA	5/25
1	ISSEY IWAKURA	5/25
0	K. FOSTER	5/27

PROCESS &  
 INSTRUMENTATION  
 MBR BASIN 1  
 (typical of 4)

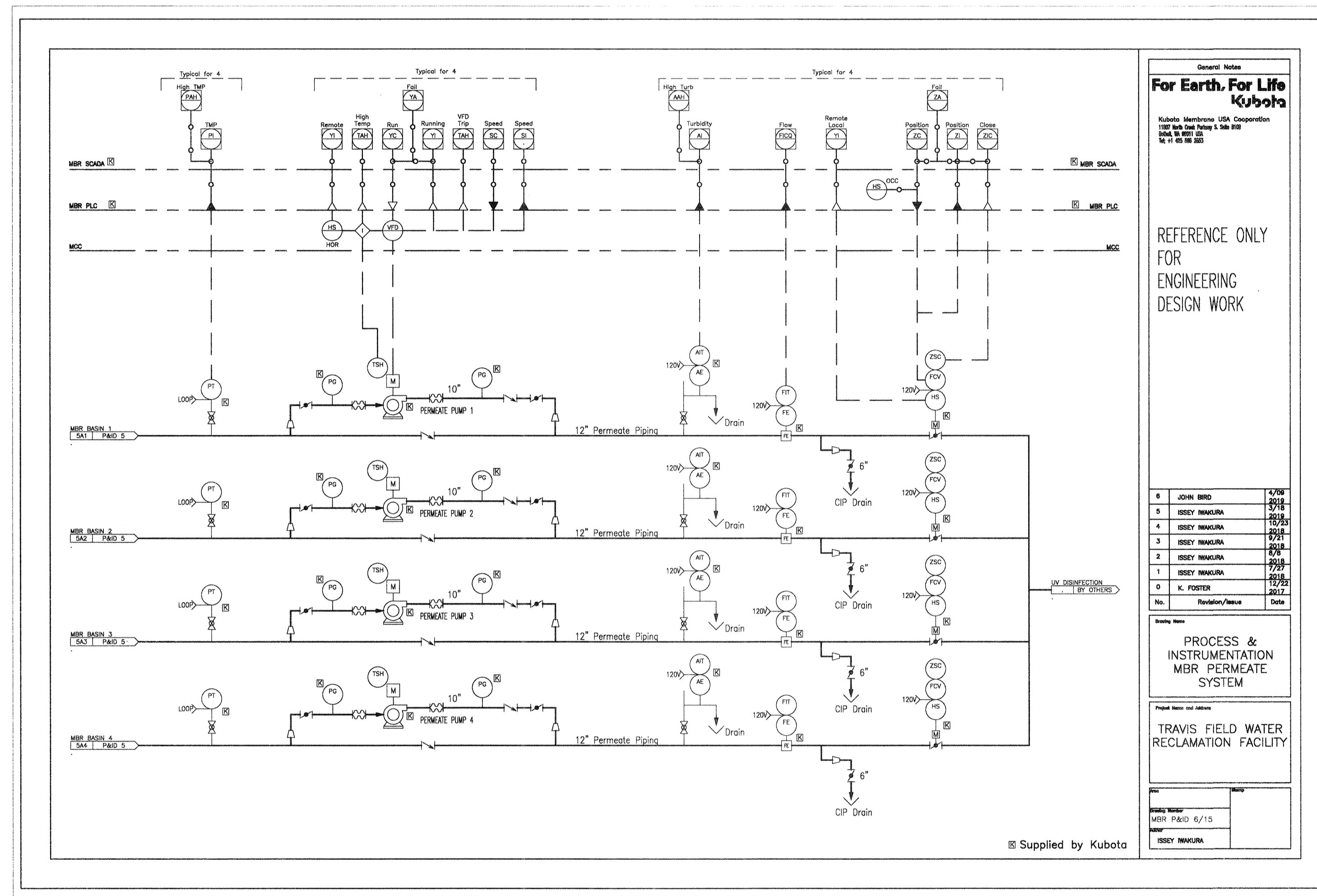
TRAVIS FIELD WATER  
 RECLAMATION FACILITY

Author	Checker
ISSEY IWAKURA	

Supplied by Kubota

BID SET - NOT FOR CONSTRUCTION





General Notes  
**For Earth. For Life**  
**Kubota**  
 Kubota Inverterless LGA Cooperation  
 1000 4th Ave. Suite 500  
 Dallas, TX 75202  
 Tel: 972.982.2000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revision/Issue	Date
6	JOHN BRID	4/26
5	ISSEY IWAGURA	2/14
4	ISSEY IWAGURA	12/13
3	ISSEY IWAGURA	10/11
2	ISSEY IWAGURA	8/11
1	ISSEY IWAGURA	7/10
0	K. FOSTER	12/23
		2012

Process Name  
**PROCESS & INSTRUMENTATION  
 MBR PERMEATE  
 SYSTEM**

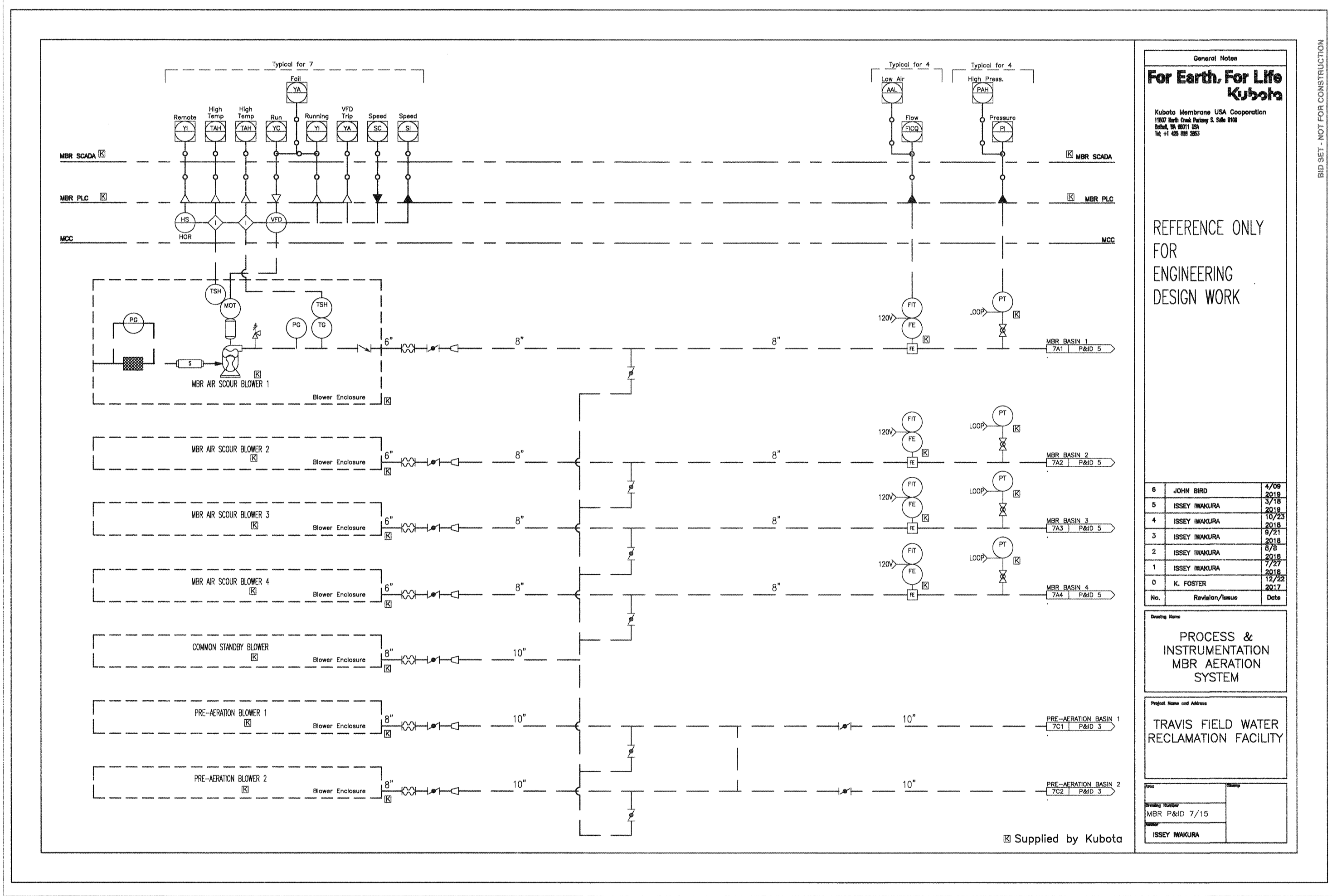
Project Name and Location  
**TRAVIS FIELD WATER  
 RECLAMATION FACILITY**

Issue	Issue Date	Issue By
Issue	Issue Date	Issue By
Issue	Issue Date	Issue By

Supplied by Kubota

MBR SET - NOT FOR CONSTRUCTION





General Notes  
**For Earth. For Life**  
**Kubota**  
 Kubota Ingersoll Rand USA Corporation  
 1000 West 10th Street, Suite 200  
 Omaha, NE 68102  
 Tel: 402.491.8800

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

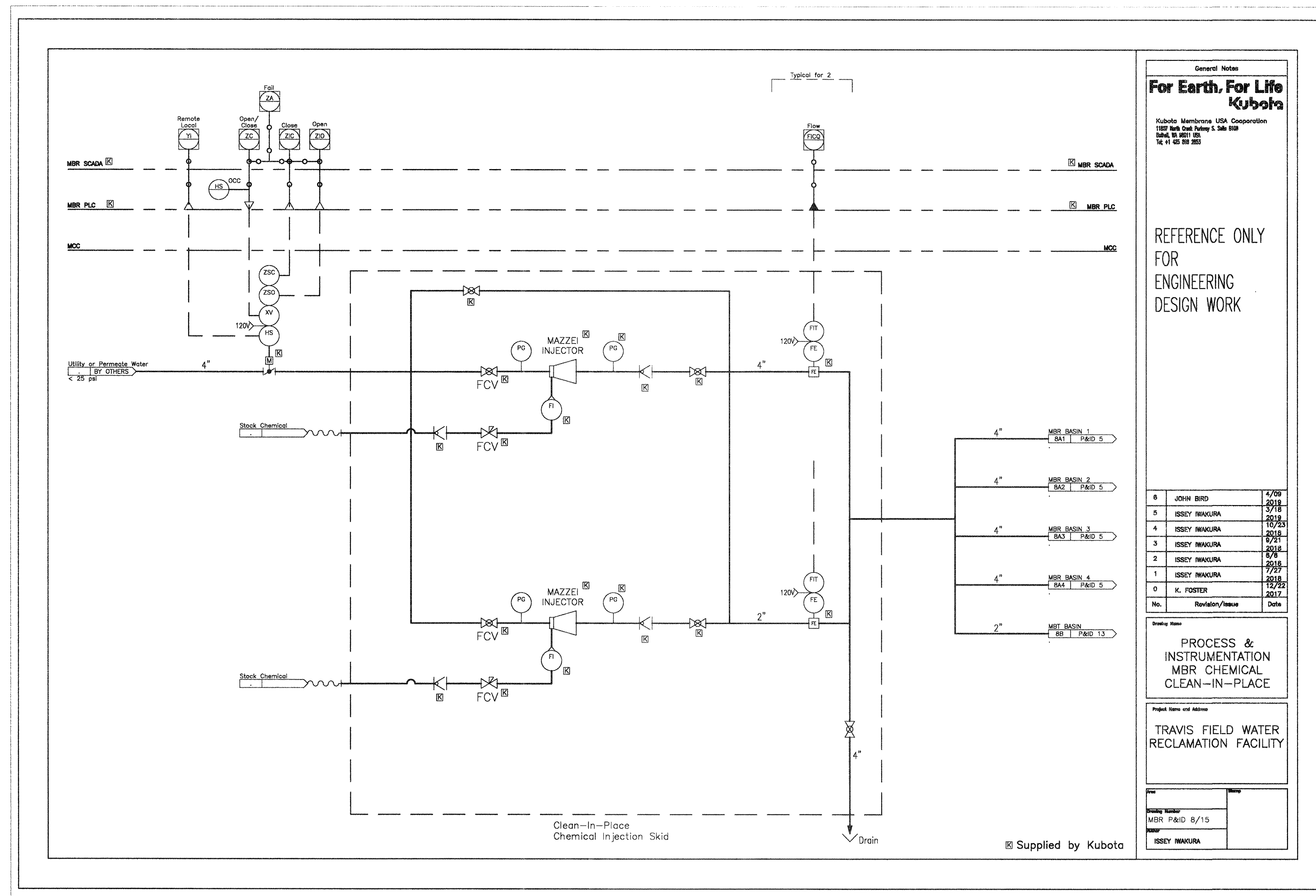
No.	Revision/Issue	Date
6	JOHN BRID	4/20/09
5	ISEEY INAGURA	3/18/09
4	ISEEY INAGURA	10/25/08
3	ISEEY INAGURA	07/21/08
2	ISEEY INAGURA	07/18/08
1	ISEEY INAGURA	7/22/07
0	K. FORSTER	12/29/07

PROCESS &  
 INSTRUMENTATION  
 MBR AERATION  
 SYSTEM

Project Name and Address  
 TRAVIS FIELD WATER  
 RECLAMATION FACILITY

Issue Number	Issue
MBR PA&ID 7/15	
ISEEY INAGURA	

BID SET. NOT FOR CONSTRUCTION



General Notes  
**For Earth, For Life**  
**Kubota**  
 Kubota Membrane USA Corporation  
 1000 Sun West Avenue & 14th St  
 Brea, CA 92603 USA  
 Tel: +1 951 851 2000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revision/Issue	Date
6	JOHN BRID	4/29/2018
5	ISSEY IWANURA	2/18/2018
4	ISSEY IWANURA	10/23/2017
3	ISSEY IWANURA	8/21/2017
2	ISSEY IWANURA	8/8/2017
1	ISSEY IWANURA	12/29/2016
0	K. FORSTER	12/23/2017

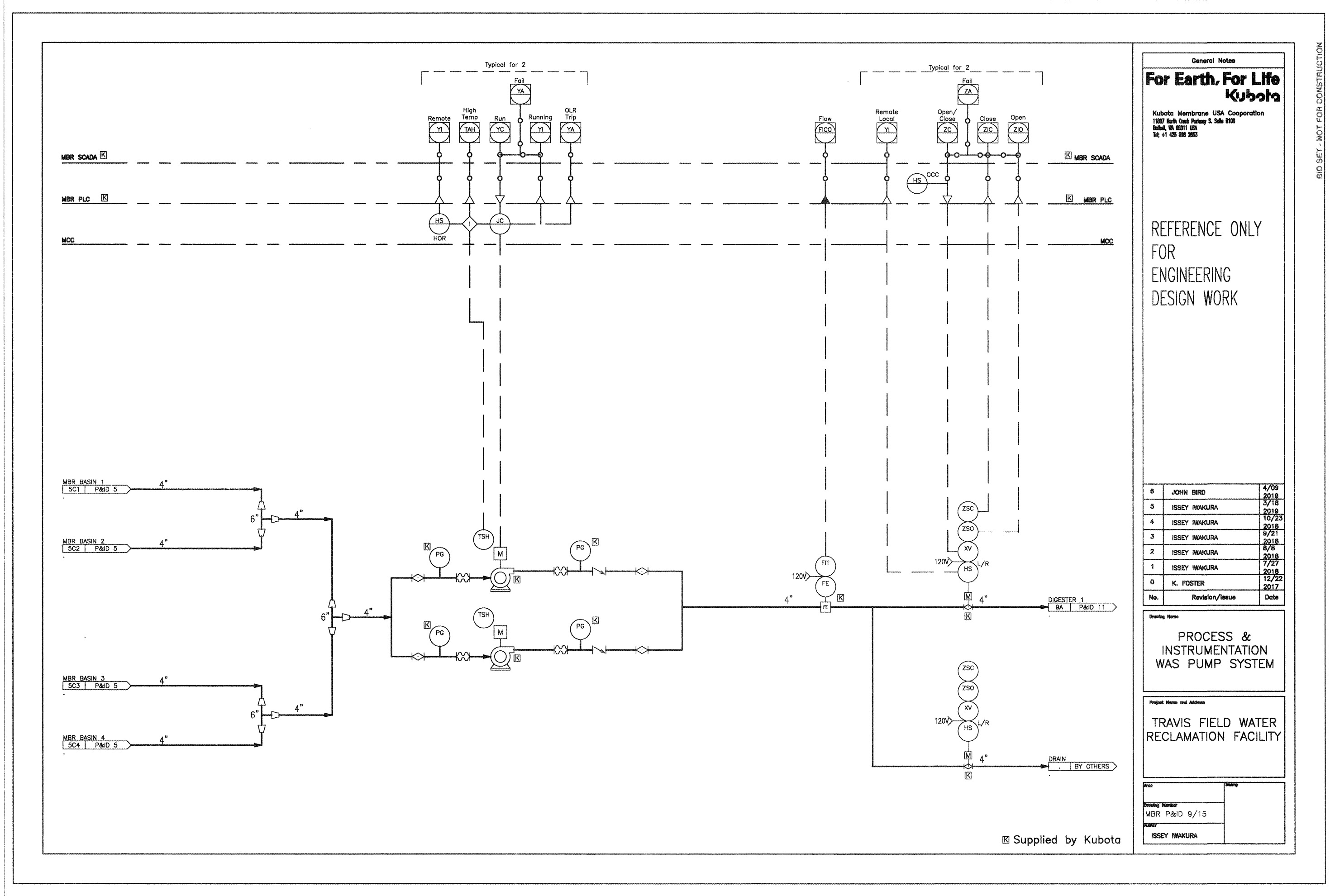
PROCESS &  
 INSTRUMENTATION  
 MBR CHEMICAL  
 CLEAN-IN-PLACE

Project Name and Address  
 TRAVIS FIELD WATER  
 RECLAMATION FACILITY

Issue	Issue
Working Number	MBR P&ID 8/15
Author	ISSEY IWANURA

BID SET - NOT FOR CONSTRUCTION

Ⓢ Supplied by Kubota



General Notes  
**For Earth. For Life**  
**Kubota**  
 Kubota, Membrane USA Corporation  
 1800 Park East Highway 1, Suite 100  
 Dallas, TX 75244  
 Tel: +1 972 952 2000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

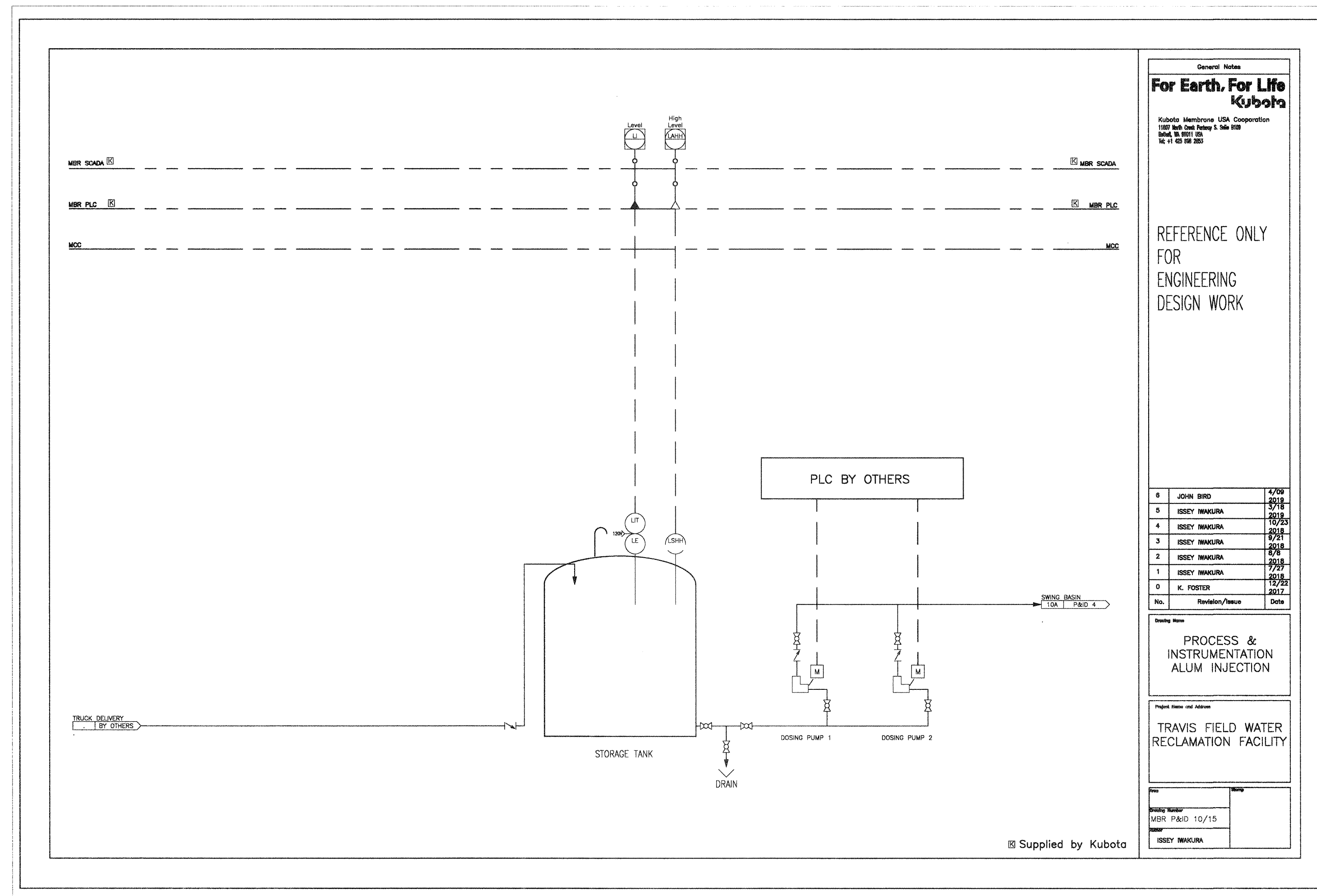
No.	Revision/Issue	Date
6	JOHN BIRD	4/08
5	ISSEY IWAGURA	5/12
4	ISSEY IWAGURA	10/23
3	ISSEY IWAGURA	8/21
2	ISSEY IWAGURA	8/16
1	ISSEY IWAGURA	7/27
0	K. FOSTER	12/27
		02/12

PROCESS &  
 INSTRUMENTATION  
 WAS PUMP SYSTEM

Project Name and Address  
 TRAVIS FIELD WATER  
 RECLAMATION FACILITY

Issue	Date
Issue Number	MBR P&ID 9/15
Issue	ISSEY IWAGURA

BID SET - NOT FOR CONSTRUCTION



General Notes  
**For Earth, For Life**  
**Kubota**  
 Kubota Membrane USA Corporation  
 100 9th Street, Suite 100  
 Brea, CA 92621  
 Tel: 949 481 2000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revision/Issue	Date
8	JOHN BRID	2/26/2015
5	ISSEY IWAGURA	5/15/2015
4	ISSEY IWAGURA	10/23/2015
3	ISSEY IWAGURA	8/21/2016
2	ISSEY IWAGURA	8/18/2016
1	ISSEY IWAGURA	7/29/2017
0	K. FOSTER	12/20/2017

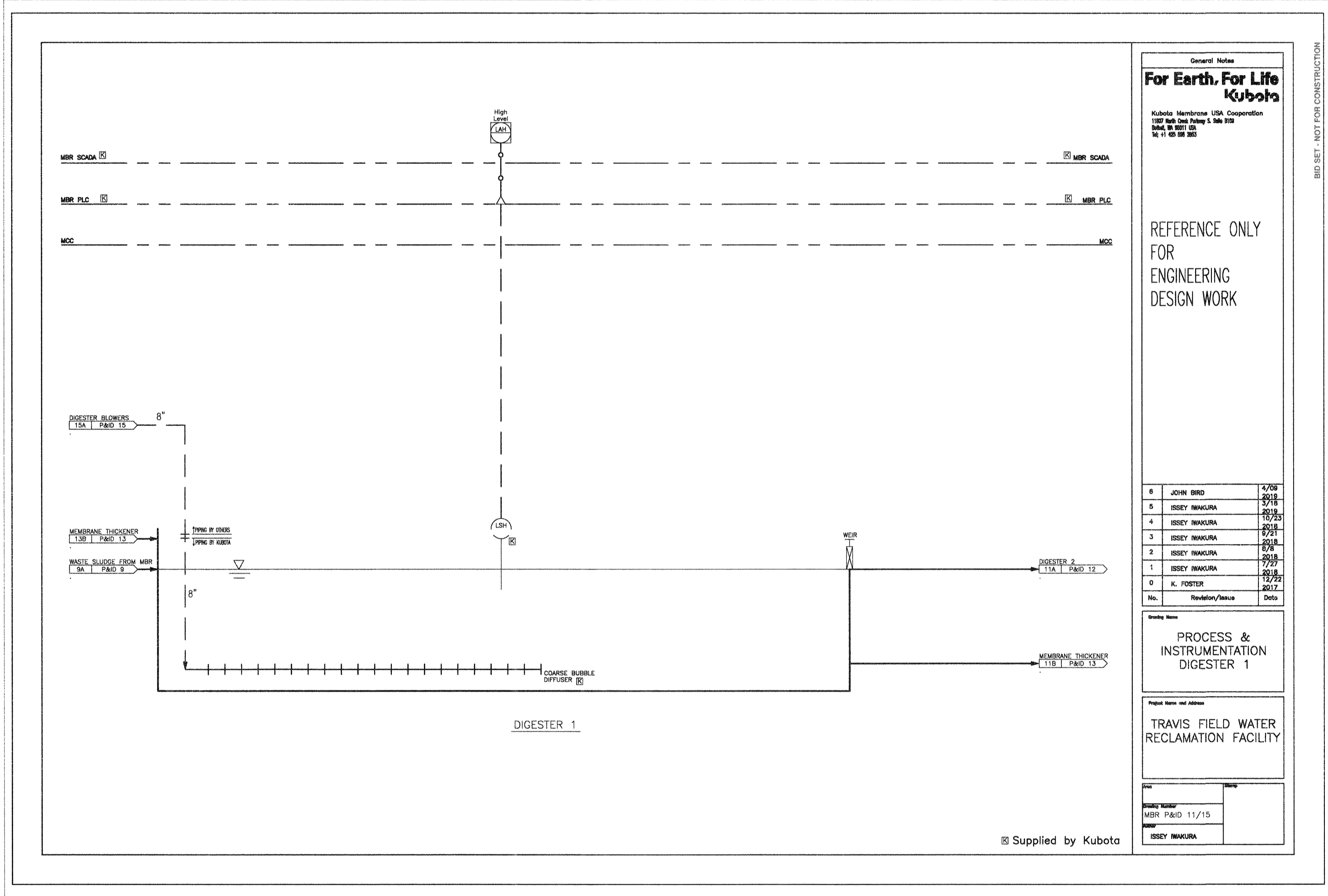
Drawing Name  
**PROCESS &  
 INSTRUMENTATION  
 ALUM INJECTION**

Project Name and Address  
**TRAVIS FIELD WATER  
 RECLAMATION FACILITY**

NO.	NAME
1	ISSEY IWAGURA

BIDD SET - NOT FOR CONSTRUCTION

Supplied by Kubota



General Notes  
**For Earth. For Life**  
**Kubota**

Kubota Membrane USA Corporation  
 1000 East Palmyra Ave. Ste 100  
 West Nyack, NY 10994  
 Tel: 845.338.8800

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

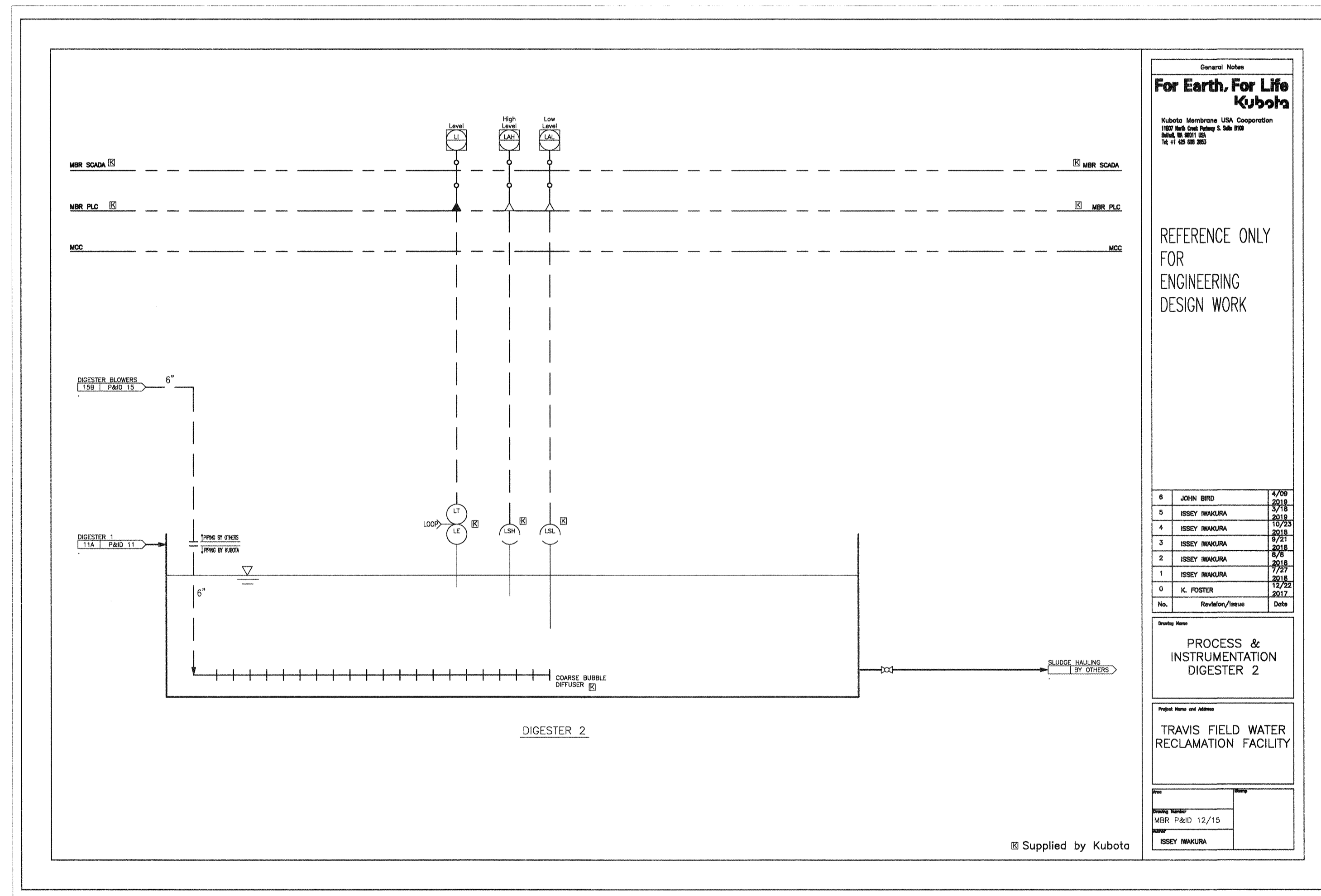
No.	Revision/Issue	Date
6	JOHN BRID	2/26/2018
5	ISSEY IWAKURA	2/15/2018
4	ISSEY IWAKURA	10/23/2017
3	ISSEY IWAKURA	2/21/2017
2	ISSEY IWAKURA	2/16/2017
1	ISSEY IWAKURA	7/27/2016
0	K. FORSTER	2/17/2012

Process Name  
**PROCESS & INSTRUMENTATION DIGESTER 1**

Project Name and Address  
**TRAVIS FIELD WATER RECLAMATION FACILITY**

DATE	BY
MBR P&ID 11/15	
ISSEY IWAKURA	

PID SET - NOT FOR CONSTRUCTION



General Notes  
**For Earth, For Life**  
**Kubota**

Kubota Membrane USA Corporation  
 1000 West 10th Street, Suite 100  
 Omaha, NE 68102 USA  
 Tel: 414.482.2800

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revision/Issue	Date
6	JOHN BIRD	4/26/15
5	ISSEY MANUARA	5/21/15
4	ISSEY MANUARA	10/23/14
3	ISSEY MANUARA	8/21/14
2	ISSEY MANUARA	8/18/14
1	ISSEY MANUARA	7/27/14
0	K. FOSTER	12/22/12

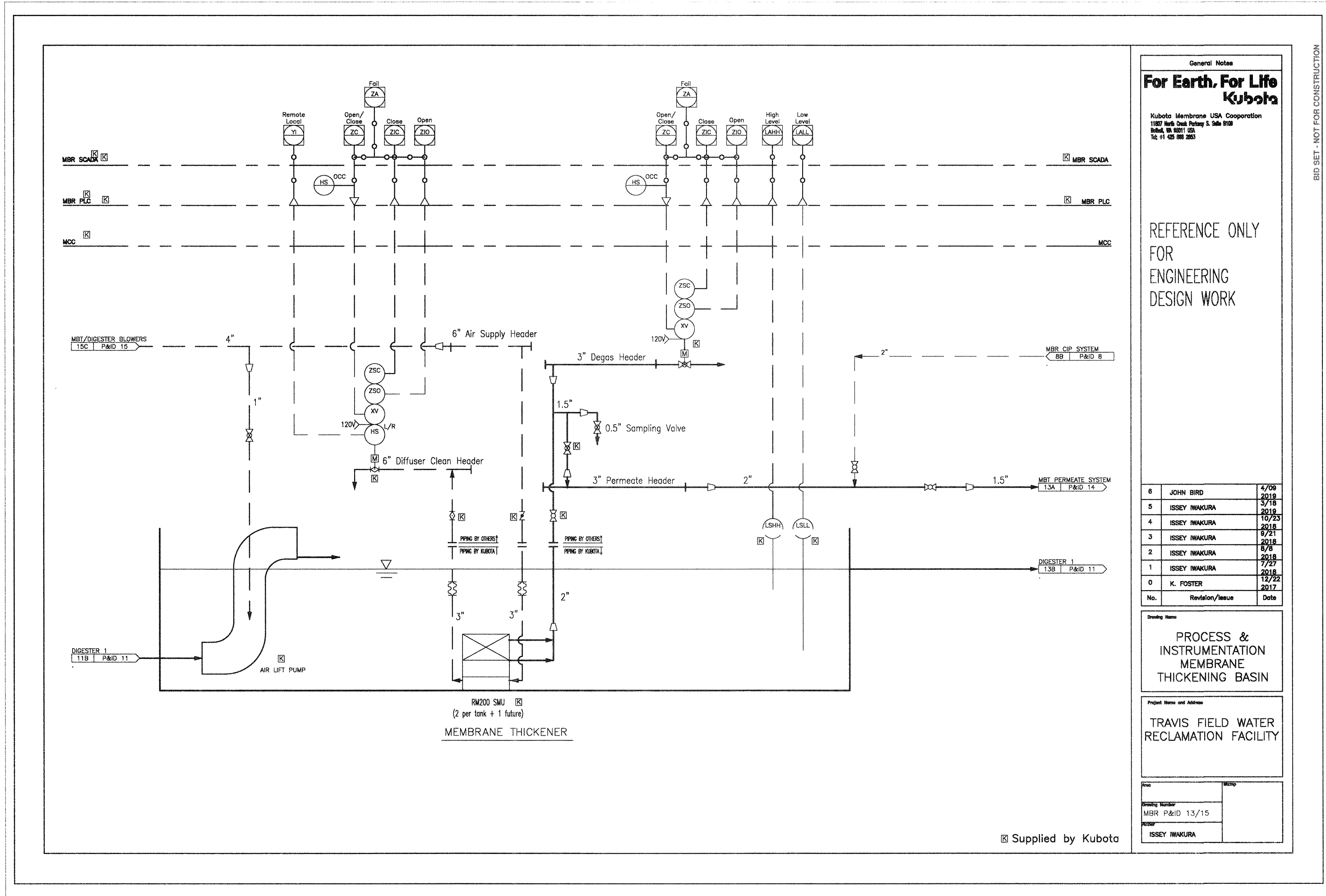
Issued Name  
**PROCESS &  
 INSTRUMENTATION  
 DIGESTER 2**

Project Name and Address  
**TRAVIS FIELD WATER  
 RECLAMATION FACILITY**

Issue	Date
Issue Number MBR P&ID 12/15	
Issue ISSEY MANUARA	

Supplied by Kubota

BIDD SET - NOT FOR CONSTRUCTION



Original Model  
**For Earth. For Life**  
**Kubota**

Kubota Membrane USA Corporation  
 1000 Park Lane Drive • Lake Park, GA 30528  
 770.428.1000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

No.	Revision/Issue	Date
6	JOHN BRID	4/15/15
5	ISSEY IWAKURA	3/11/15
4	ISSEY IWAKURA	2/11/15
3	ISSEY IWAKURA	2/11/15
2	ISSEY IWAKURA	2/11/15
1	ISSEY IWAKURA	2/11/15
0	K. POSTER	2/11/15

Process Name  
**PROCESS &  
 INSTRUMENTATION  
 MEMBRANE  
 THICKENING BASIN**

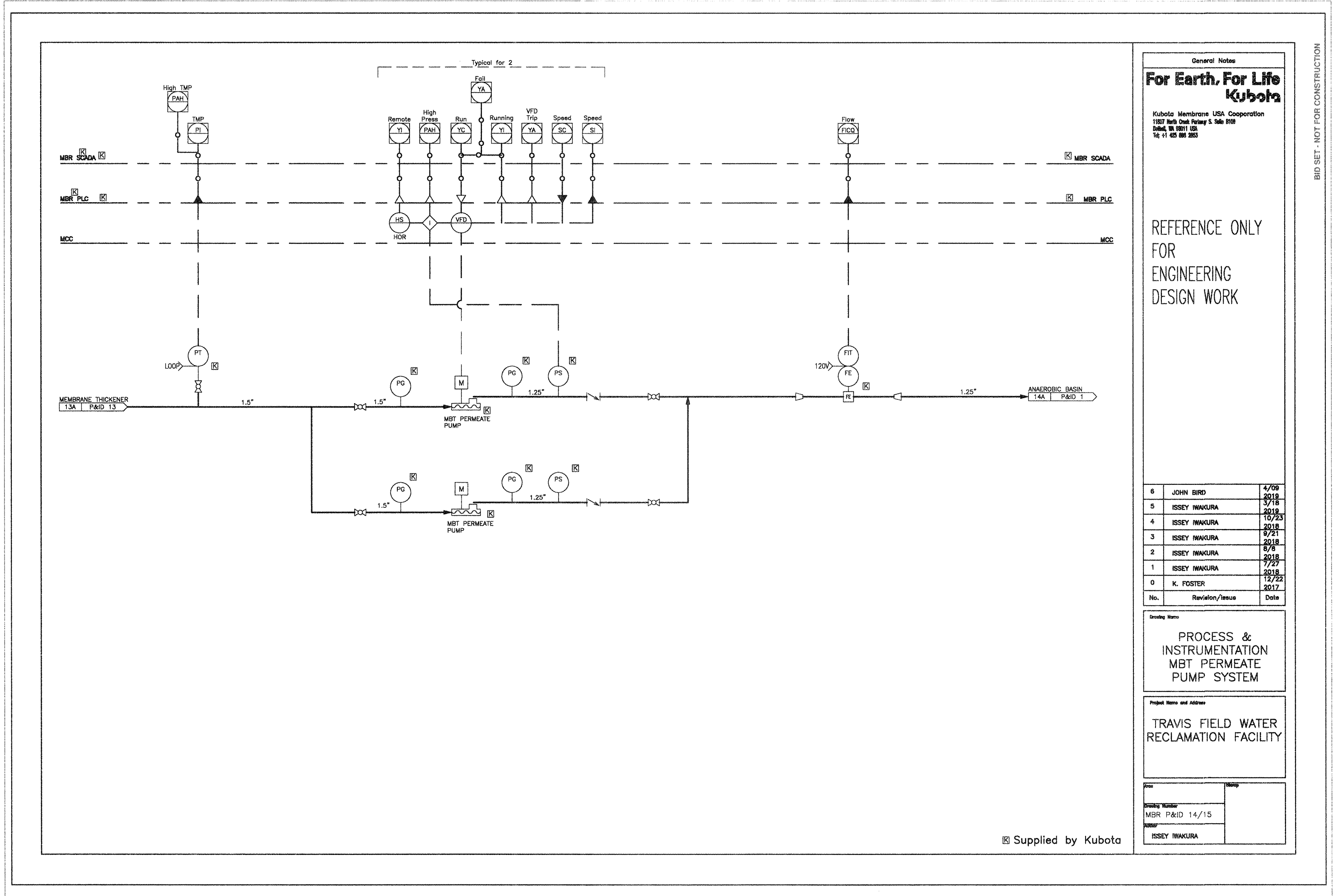
Project Name and Address  
**TRAVIS FIELD WATER  
 RECLAMATION FACILITY**

Issue	Issue
Issue Number	
Issue Date	
Issue By	ISSEY IWAKURA

Supplied by Kubota

BID SET - NOT FOR CONSTRUCTION





General Note  
**For Earth, For Life**  
**Kubota**

Kubota Machinery USA Corporation  
 1997 1st Ave. Suite 2, 1st Fl.  
 Dallas, TX 75241-0001  
 Tel: 972-980-8000

REFERENCE ONLY  
 FOR  
 ENGINEERING  
 DESIGN WORK

6	JOHN BIRD	4/20
5	ISSEY IWAGURA	3/18
4	ISSEY IWAGURA	10/20
3	ISSEY IWAGURA	9/21
2	ISSEY IWAGURA	8/4
1	ISSEY IWAGURA	8/18
0	K. FOSTER	12/21
0	K. FOSTER	10/17
No.	Revisory/Issue	Date

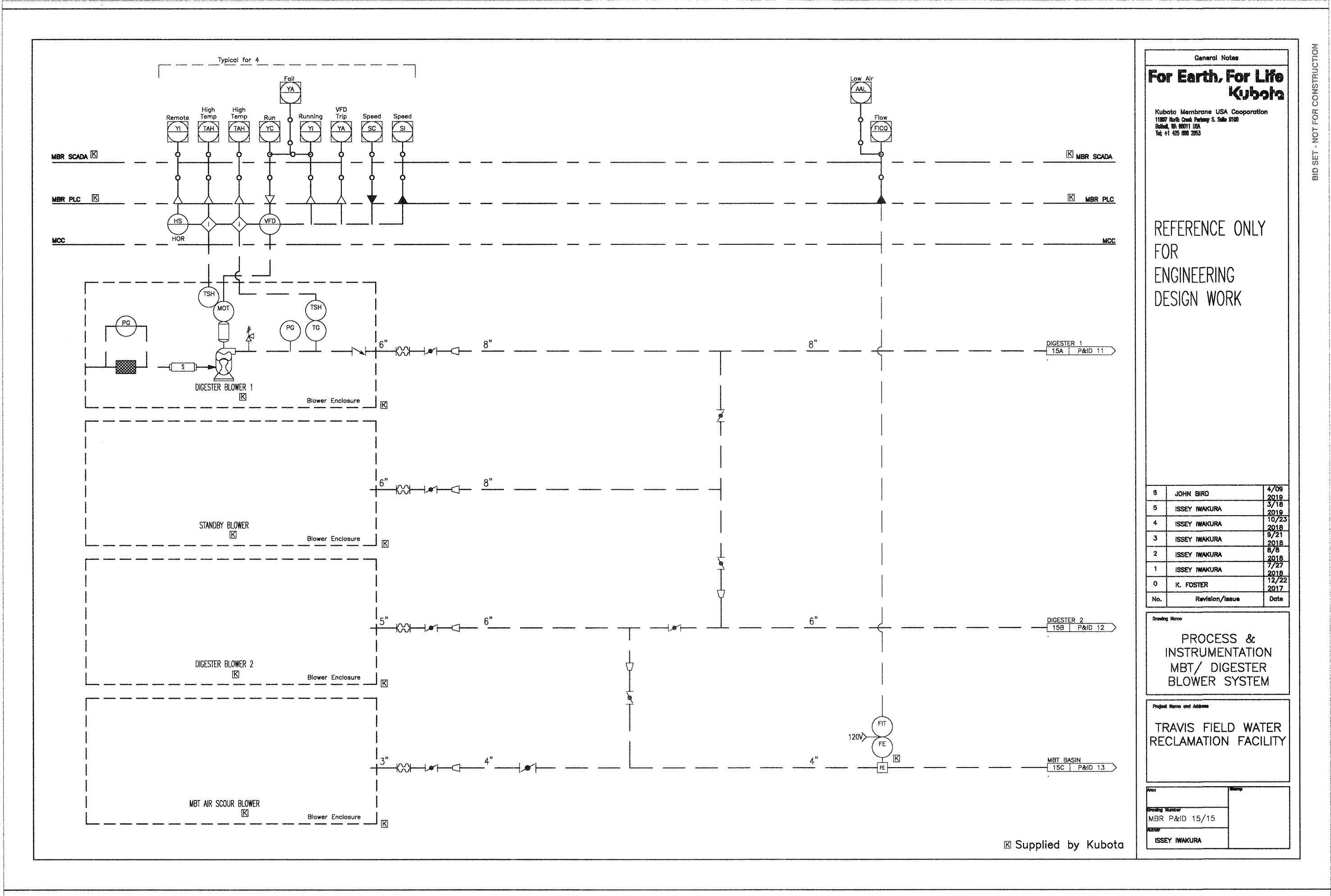
Process Name:  
 PROCESS &  
 INSTRUMENTATION  
 MBT PERMEATE  
 PUMP SYSTEM

Project Name and Address:  
 TRAVIS FIELD WATER  
 RECLAMATION FACILITY

Issue	Issue
Issue Number	Issue
MBT P&ID 14/15	
Issue	
ISSEY IWAGURA	

Supplied by Kubota

BID SET - NOT FOR CONSTRUCTION



**For Earth, For Life  
Kubota**

Kubota Machinery USA Corporation  
1887 East 20th Street, Suite 200  
Mesa, AZ 85205  
Tel: 480-982-2000

REFERENCE ONLY  
FOR  
ENGINEERING  
DESIGN WORK

No.	Revision/Issue	Date
9	JOHN BRID	4/26/15
8	ISSEY INAMURA	5/14/15
7	ISSEY INAMURA	5/15/15
6	ISSEY INAMURA	5/15/15
5	ISSEY INAMURA	5/15/15
4	ISSEY INAMURA	5/15/15
3	ISSEY INAMURA	5/15/15
2	ISSEY INAMURA	5/15/15
1	ISSEY INAMURA	5/15/15
0	K. FOSTER	5/15/15

PROCESS &  
INSTRUMENTATION  
MBT / DIGESTER  
BLOWER SYSTEM

TRAVIS FIELD WATER  
RECLAMATION FACILITY

Issue	Date
Issued	15/15
By	ISSEY INAMURA

Supplied by Kubota

BID SET - NOT FOR CONSTRUCTION