EXISTING 14" RAS LINE

EXISTING 14" AIRLIFT PUMP WITH 3" AIR SUPPLY TO REMAIN IN PLACE

EXISTING 8" PVC DRAIN LINE

EXISTING 14" AIR SUPPLY LINE TO REMAIN IN PLACE

EXISTING 14" AIR SUPPLY LINE TO REMAIN IN PLACE

INSTALL 3" AIR SUPPLY LINE STAINLESS STEEL PIPE (SCH. 40), 24LF. WITH 12 AERATION ASSEMBLY @24" C-C SEE 1" G-O DIFFUSER ASSEMBLY DETAIL

INSTALL 3" AIR SUPPLY LINE STAINLESS STEEL PIPE (SCH. 40), 16LF. WITH 8 AERATION ASSEMBLY @24" C-C SEE 1" G-O DIFFUSER ASSEMBLY DETAIL

INSTALL 3" AIR SUPPLY LINE STAINLESS STEEL PIPE (SCH. 40), 30LF. WITH 15 AERATION ASSEMBLY @24" C-C SEE 1" G-O DIFFUSER ASSEMBLY DETAIL

24'-0"

16'-0"

30'-0"

INSTALL 38X48 WATERMAN MODEL SS-254-0-4 SLIDE GATE FOR AERATION BASIN No.4

INSTALL 38X48 WATERMAN MODEL SS-254-0-4 SLIDE GATE FOR AERATION BASIN No.3

INSTALL 38X48 WATERMAN MODEL SS-254-0-4 SLIDE GATE FOR AERATION BASIN No.2

INSTALL 38X48 WATERMAN MODEL SS-254-0-4 SLIDE GATE FOR AERATION BASIN #1

REPAIR 3- AERATION ASSEMBLY 1" G-O DIFFUSER ASSEMBLY

REPAIR 8- AERATION ASSEMBLY 1" G-O DIFFUSER ASSEMBLY

REPAIR 5- AERATION ASSEMBLY 1" G-O DIFFUSER ASSEMBLY

REPLACE SUPPORT BEAM

REPLACE SUPPORT BEAM

REPLACE SUPPORT BEAM

EXISTING 14" AIR SUPPLY LINE TO REMAIN IN PLACE

EXISTING AIR BRIDGE TO REMAIN IN PLACE

PROP. 8"X6" TEE

REMOVE 1FT 6" PIPE AND PROP. 6" CAP

PROP. 8"X6" TEE 6" BUTTERFLY VALVE W/ MANUAL ACTUATOR

PROP. 12" Butterfly Valve with Electric Actuator

34 L.F. OF 8" PIPE STAINLESS STEEL (SCH. 40)

TIE TO EXISTING

CONNECT 3" PIPE ADD 3" BUTTERFLY VALVE WITH MANUAL ACTUATOR

CONNECT 3" PIPE ADD 3" BUTTERFLY VALVE WITH MANUAL ACTUATOR

CAP 12" AND CONNECT TO PROPOSED 8" PIPE 4" BUTTERFLY VALVE W/ MANUAL ACTUATOR 4"X8" TEE 3-4" 90° ELBOWS

THERMAL MASS FLOWMETER

12"X10" REDUCER 10"X8" TEE 8" 90° BEND

EXISTING 10"

EXISTING 2'-6" SQUARE OPENING AT FLOOR

INSTALL 30X30 WATERMAN MODEL SS-251-0-4 SLIDE GATE

PROPOSED ANALYZER DISSOLVED OXYGEN

PROPOSED ANALYZER DISSOLVED OXYGEN

PROPOSED ANALYZER DISSOLVED OXYGEN

PROPOSED ANALYZER DISSOLVED OXYGEN

20'-0"

5'-0"

INSTALL 6" BLIND FLANGE

REMOVE 24 LF. OF EXISTING 6" PIPE

EXISTING 4" -TD TO REMAIN IN PLACE

EXISTING 4" TD TO REMAIN IN PLACE

EXISTING 4" TD TO REMAIN IN PLACE

EXISTING 4" TD TO REMAIN IN PLACE

EXISTING 30" PIPE TO REMAIN IN PLACE

EXISTING 2'-0" SQUARE OPENING AT FLOOR

EXISTING 2'-0" SQUARE OPENING AT FLOOR

EXISTING 2'-0" SQUARE OPENING AT FLOOR

EXISTING 2'-0" SQUARE OPENING AT FLOOR

EXISTING 2'-0" SQUARE OPENING AT FLOOR

EXISTING 2'-0" SQUARE OPENING AT FLOOR

EXISTING 10" AIR SUPPLY TO REMAIN IN PLACE

EXISTING 3" AIR SUPPLY TO REMAIN IN PLACE

REPAIR 1 AERATION ASSEMBLY

6" X 6" TEE

34 L.F. OF 6" PIPE STAINLESS STEEL (SCH. 40)

INSTALL 6" BLIND FLANGE

6" TAP INTO EXIST. 14"

CONNECT 3" PIPE ADD 3" BUTTERFLY VALVE WITH MANUAL ACTUATOR

DISCONNECT 6" PIPE FROM 14" PIPE AND REPLACE WITH SPOOL PIECE.

THERMAL MASS FLOWMETER

PROP. 14" Butterfly Valve with Electric Actuator

PROP. 6" 90° BEND

CONNECT 4" PIPE ADD 4" BUTTERFLY VALVE WITH MANUAL ACTUATOR 4"x3" REDUCER

REMOVE EXISTING PVC PIPE INSTALL 27 AERATION ASSEMBLY @24" C-C 1" G-O DIFFUSER ASSEMBLY

INSTALL 3" AIR SUPPLY LINE STAINLESS STEEL PIPE (SCH. 40), 54 LF.

EFFLUENT CHANNEL

24'-0"

6'-0"

EXISTING TO REMAIN

INFLUENT CHANNEL

MANUAL BAR SCREEN TO REMAIN IN PLACE

EXISTING 10" AIRLIFT PUMPS TO REMAIN IN PLACE

12" FORCE MAIN FROM PLANT LIFT STATION

54'-0"

FROM LS 19, EXISTING 10" FORCE MAIN

NOTE: Remove grit from existing basins as required to restore all 1" G-O Diffuser Assemblies Approximately.

EXISTING 12" FORCE MAIN(LS 19)

EXISTING 20" MIXED LIQUOR LINES TO FLOW SPLITTER

NOTES:

1. REMOVE APPROXIMATELY 1,475 CY OF GRIT FROM EXISTING AERATION BASINS, INFLUENT CHANNEL, AND EFFLUENT CHANNEL. CONTRACTOR IS RESPONSIBLE FOR GRIT DISPOSAL.
2. A SUFFICIENT AMOUNT OF GRIT MUST BE REMOVED TO RESTORE ALL FAILED AERATION ASSEMBLIES.

⚠1 ADDENDUM No.1: REVISED AIR SUPPLY MODIFICATIONS TO INCLUDE THERMAL MASS FLOWMETER. SPECIFIED SCHEDULE 40 FOR ALL AIR SUPPLY LINES.

N

SCALE: 1"-50 FT.

1" 316, STAINLESS STEEL UNION

1" SCH 40, 316 STAINLESS STEEL NIPPLE

1" SCH.40, 316 STAINLESS STEEL NIPPLE

1" ORIFICE PLUG ASSY'

1" 316 STAINLESS STEEL THREADED TEE

1" SCH.40, 316 STAINLESS STEEL DROP PIPE

3" X 3" X 1/4" <

1" POLYPROPYLENE SPLIT PIPE CLAMP W/ 316 STAINLESS STEEL BOLTS W/ LOCKNUTS & BACK UP PLATE W/ SUPPORT ANGLE

1" G-O DIFFUSER

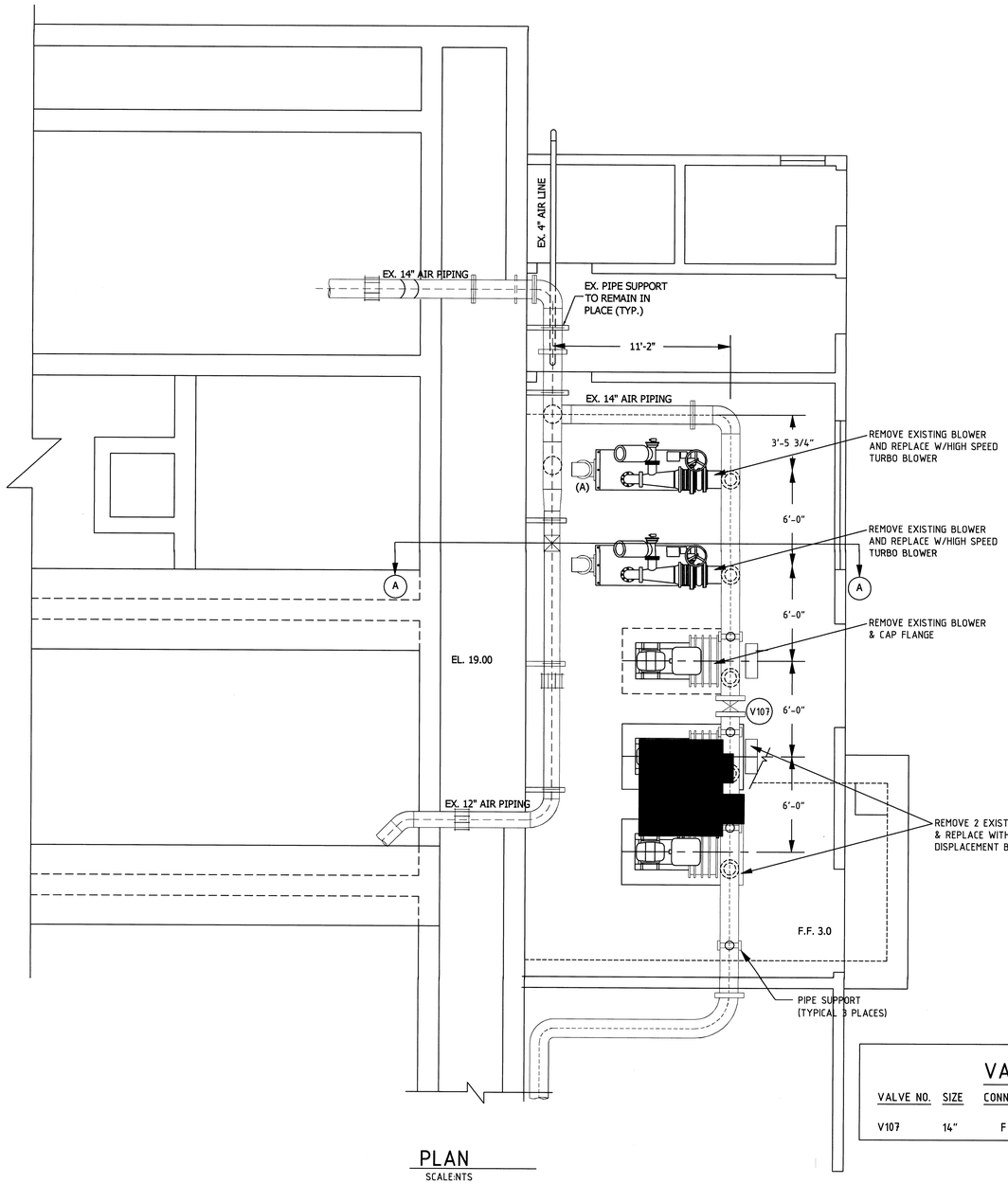
1" G-O DIFFUSER ASSEMBLY DETAIL
SCALE:NTS

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED
PROFESSIONAL ENGINEER
Seal
10-3-16

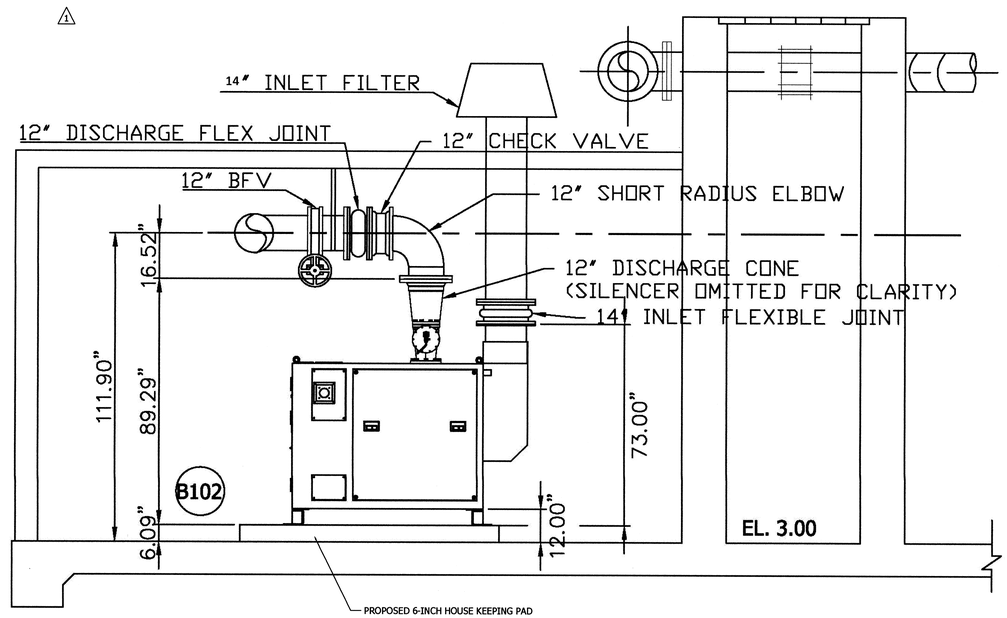
Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

Isla Blanca WWTP
Site Plan And
Mechanical Modifications
To Existing Plant

LAGUNA MADRE WATER DISTRICT



PLAN
SCALE:NTS



PROFILE, SECTION A-A

NOTE: LAYOUT IS PRELIMINARY. FINAL LAYOUT TO BE PROVIDED IN SUBMITTALS.

VALVE SCHEDULE

VALVE NO.	SIZE	CONNECTION	TYPE	COMMENTS
V107	14"	F	EXIST BUTTERFLY VALVE TO REMAIN IN PLACE	HANDWHEEL OPERATOR

GENERAL NOTES

EACH BLOWER SHALL BE PROVIDED WITH A VERTICALLY MOUNTED INTAKE FLANGE AND A CARTRIDGE TYPE INTAKE FILTER SILENCER TO REDUCE ENTRANCE OF RAIN WATER, MOISTURE, AND DUST INTO THE BLOWER INLET. FILTER SILENCER SHALL BE CARTRIDGE-TYPE WITH WEATHER HOOD AND WITH 125# ANSI FLANGED OUTLET SIZED TO FIT THE BLOWER INLET PIPING WITHOUT REQUIREMENT FOR REDUCERS OR TRANSITIONS. FILTER SILENCER SHALL BE POWDER COATED AND SUITABLE FOR CONTINOUS WEATHER EXPOSURE IN EXTERIOR LOCATIONS. FILTER SILENCER SHALL BE ENDUSTRA "TRI-VENT SERIES P09" WITH ELEMENT E047937P WITH 98% EFFICIENT @ 10-MICRON (NOMINAL) HYDROPHOBIC MEDIUM ADHESIVE POTTED ON ALL FOUR SIDES WITHIN A GALVANIZED STEEL FRAME WITH FULL FACE GASKET ON DOWNSTREAM SIDE, AND SHALL FIT TIGHTLY WITHIN THE FILTER FRAME TO DISCOURAGE AIR BYPASS.

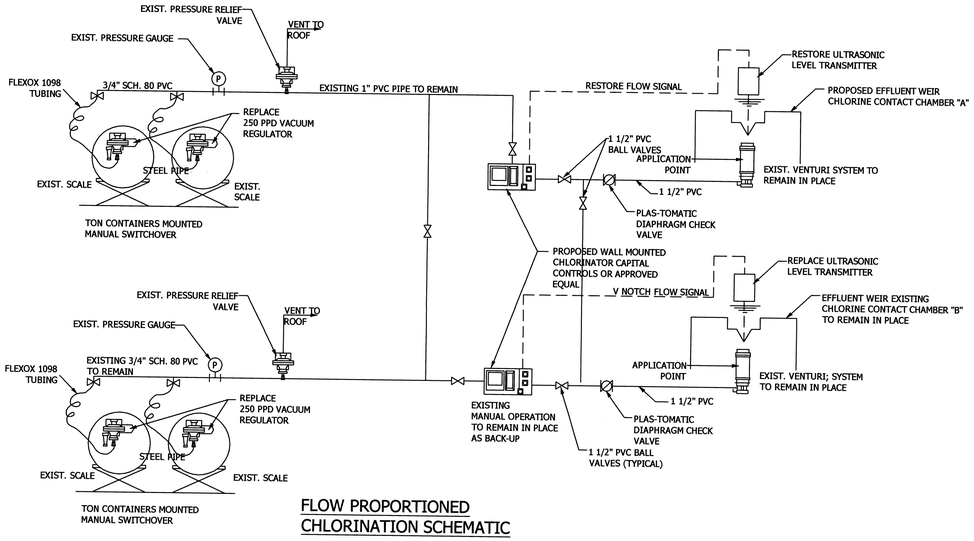
1 NOTES:
ADDENDUM No1: REVISED TURBO BLOWER PROFILE VIEW FOR BASE BID. BLOWERS MUST BE ELEVATED 12-INCHES ABOVE FINISHED FLOOR ELEVATION TO STAY ABOVE THE 100-YR FLOOR PLAIN.

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED
PROFESSIONAL ENGINEER
Seal
10-3-16

Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

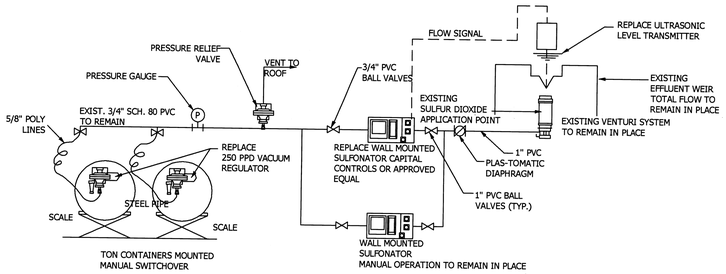
Isla Blanca WWTP
Blower Modifications

LAGUNA MADRE WATER DISTRICT



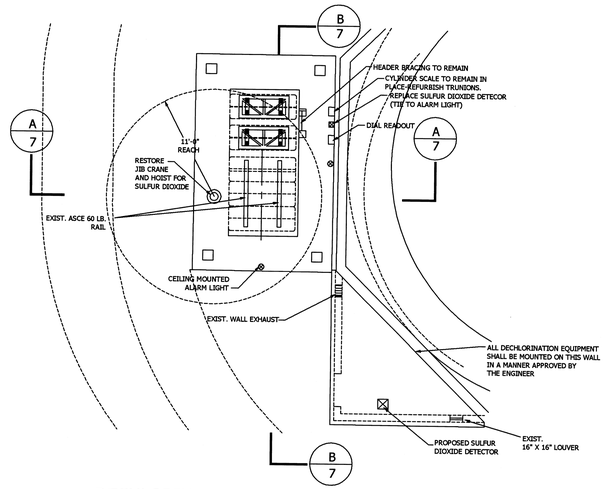
FLOW PROPORTIONED CHLORINATION SCHEMATIC

SCALE: N.T.S.



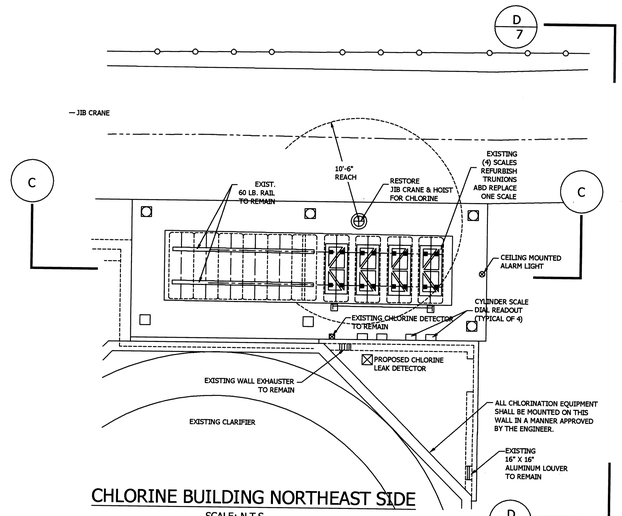
DECHLORINATION SCHEMATIC

SCALE: N.T.S.



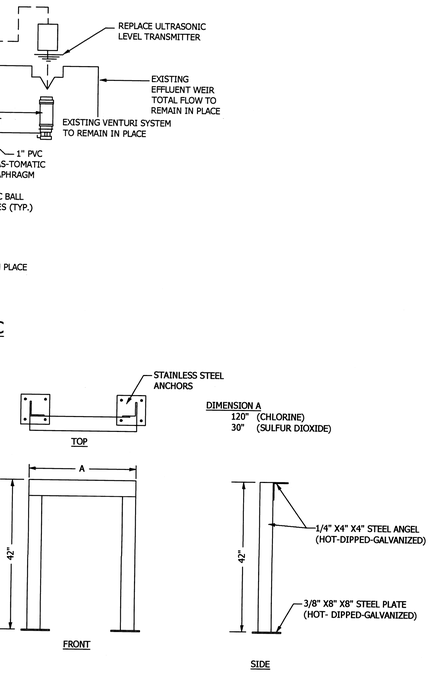
DECHLORINATION BUILDING SOUTHWEST SIDE

SCALE: N.T.S.



CHLORINE BUILDING NORTHEAST SIDE

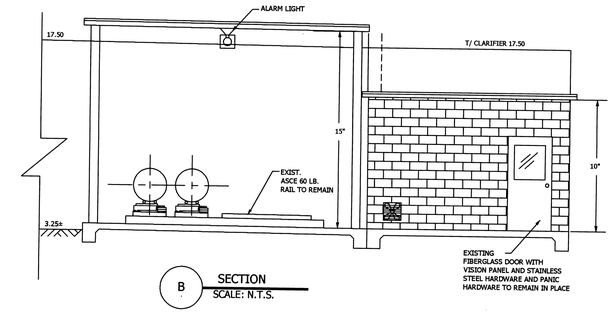
SCALE: N.T.S.



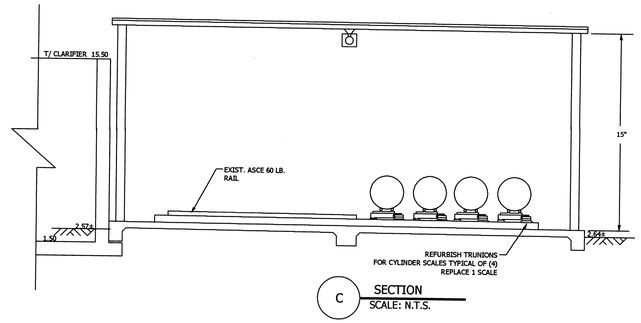
CHLORINATION/DECHLORINATION HEADER BRACING TO REMAIN IN PLACE

CHLORINE AND SULFUR DIOXIDE HOISTS

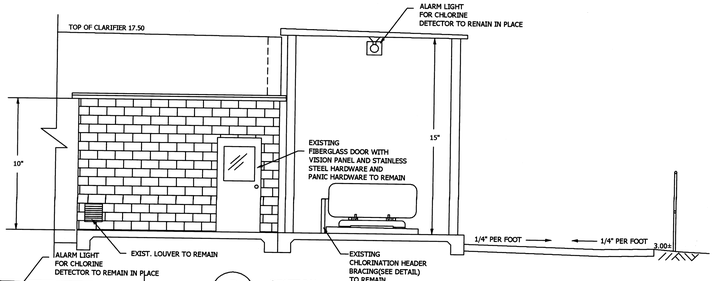
1) FOR JIB CRANES, REPLACE CORRODED ROLLERS, AND HARDWARE(NUTS & BOLTS), AND BEARINGS; INSTALL A ROTATION STOP.
2) REPLACE EXISTING HOIST AND TROLLEY SEE SECTION 467400 - HOIST IN SPECIFICATIONS, EXISTING POWER IS IN GOOD CONDITION AND CAN REMAIN IN PLACE.



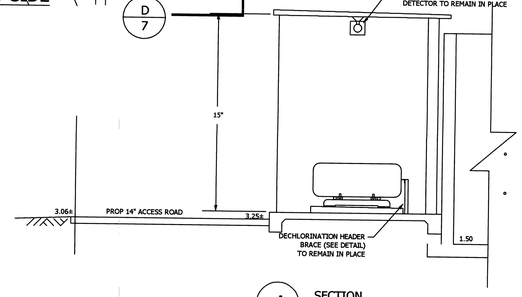
B SECTION
SCALE: N.T.S.



C SECTION
SCALE: N.T.S.



D 7 SECTION
SCALE: N.T.S.



A SECTION
SCALE: N.T.S.

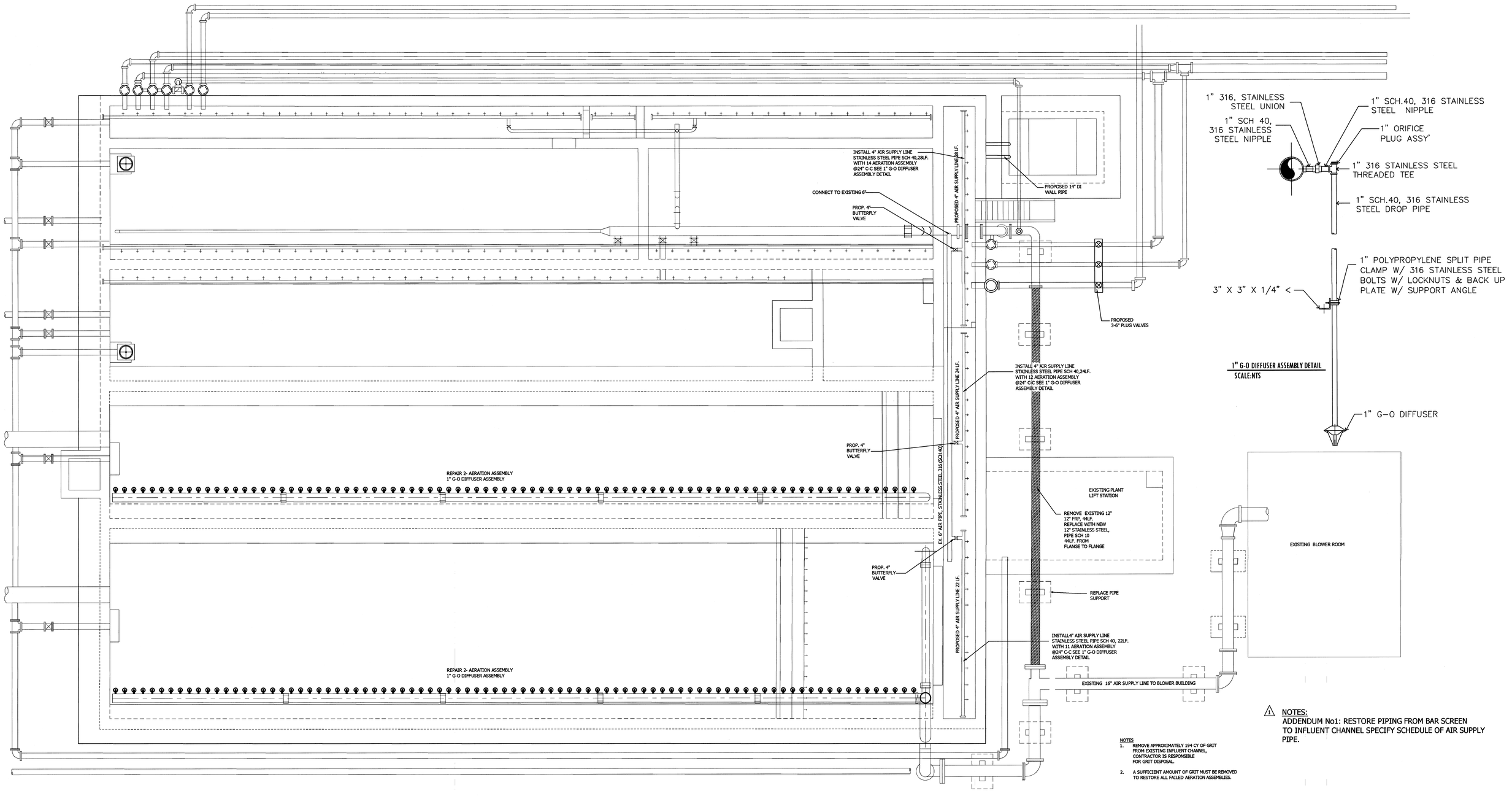
⚠1 NOTES:
ADDENDUM No1: SIZE ALL PROPOSED ROTAMETERS FOR 250 PPD. DISTRICT DOES NOT USE INDUCTION PUMPS FOR CHLORINATION AND DECHLORINATION EQUIPMENT. EXISTING VENTURI SYSTEM TO REMAIN IN PLACE. AUTOMATIC SWITCHOVER REMOVED FROM ALL VACUUM REGULATORS. RESTORE EJECTORS AT ALL SITES.

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED PROFESSIONAL ENGINEER
Charles F. Ortiz, P.E.
10-3-16
Seal

Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

Isla Blanca WWTP
Chlorination & Dechlorination Equipment

LAGUNA MADRE WATER DISTRICT



1" G-O DIFFUSER ASSEMBLY DETAIL
SCALE:NTS

NOTES
1. REMOVE APPROXIMATELY 194 CY OF GRIT FROM EXISTING INFLUENT CHANNEL, CONTRACTOR IS RESPONSIBLE FOR GRIT DISPOSAL.
2. A SUFFICIENT AMOUNT OF GRIT MUST BE REMOVED TO RESTORE ALL FAILED AERATION ASSEMBLIES.

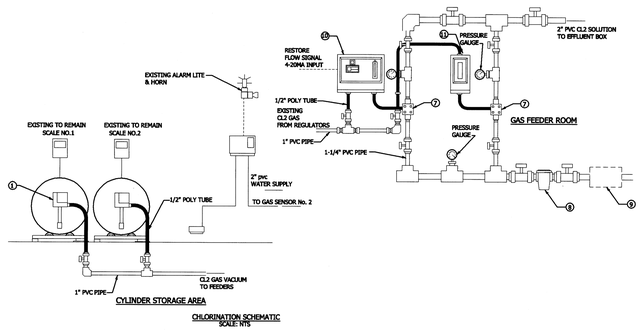
⚠1 NOTES:
ADDENDUM No1: RESTORE PIPING FROM BAR SCREEN TO INFLUENT CHANNEL SPECIFY SCHEDULE OF AIR SUPPLY PIPE.

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED
PROFESSIONAL ENGINEER
Charles F. Ortiz, P.E.
10-3-16
Seal

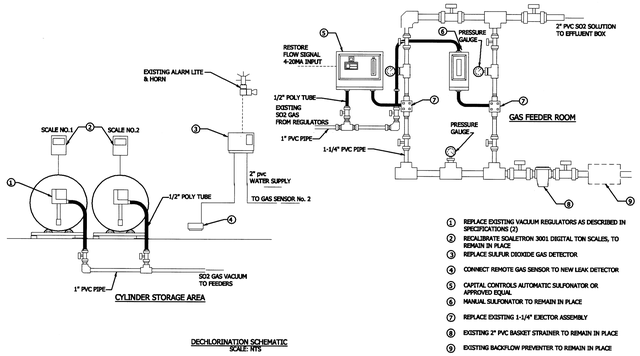
Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

Laguna Madre Water District
Andy Bowie Wastewater Plant
Site Plan and Mechanical Modifications To
Air Supply Line

LAGUNA MADRE WATER DISTRICT

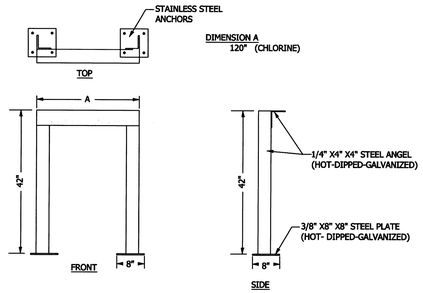


CHLORINATION SCHEMATIC
SCALE: NTS



DECHLORINATION SCHEMATIC
SCALE: NTS

1. REPLACE EXISTING VACUUM REGULATORS AS DESCRIBED IN SPECIFICATIONS (2)
2. RECALIBRATE SCALETRON 3001 DIGITAL TON SCALES, TO REMAIN IN PLACE
3. REPLACE SULFUR DIOXIDE GAS DETECTOR
4. CONNECT REMOTE GAS SENSOR TO NEW LEAK DETECTOR
5. CAPITAL CONTROLS AUTOMATIC SULFONATOR OR APPROVED EQUAL
6. MANUAL SULFONATOR TO REMAIN IN PLACE
7. REPLACE EXISTING 1-1/4" EJECTOR ASSEMBLY
8. EXISTING 2" PVC BASKET STRAINER TO REMAIN IN PLACE
9. EXISTING BACKFLOW PREVENTER TO REMAIN IN PLACE
10. CAPITAL CONTROLS AUTOMATIC CHLORINATION OR APPROVED EQUAL
11. MANUAL CHLORINATOR TO REMAIN IN PLACE



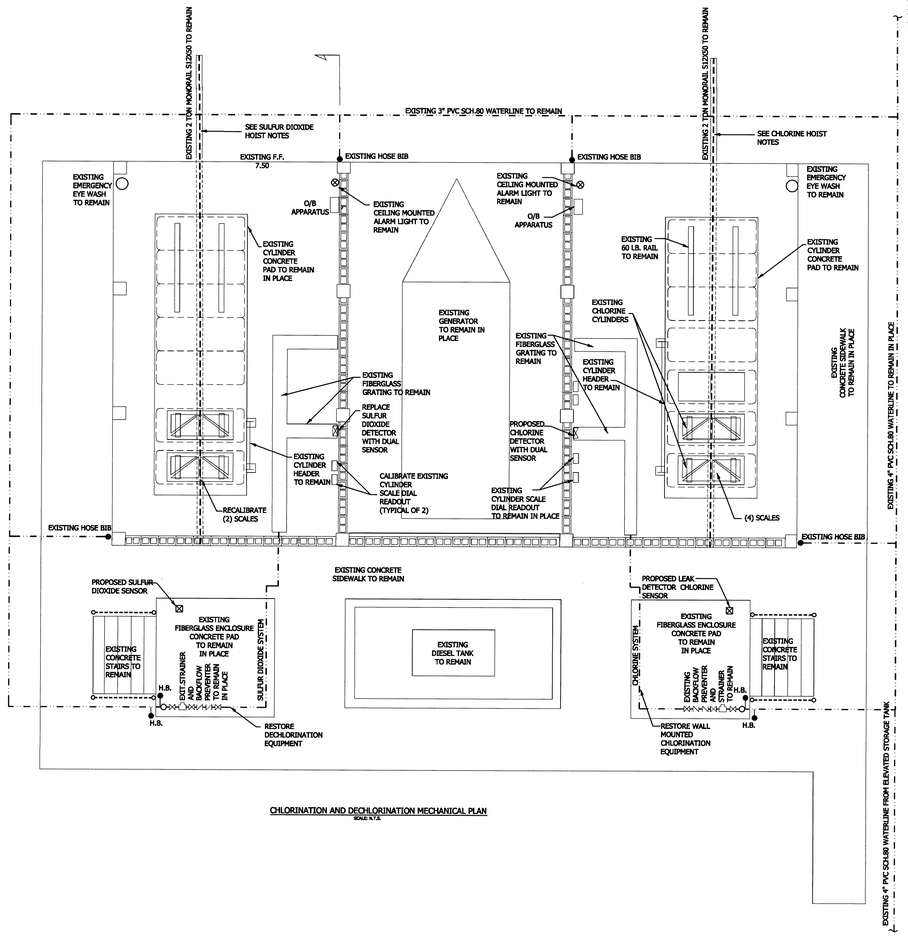
GENERAL NOTES

THE SULFUR DIOXIDE AND CHLORINE SCHEMATIC IS PROVIDED FOR GUIDANCE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A DETAILED SUBMITTAL LAYOUT SHOWING PIPING, FITTINGS, VALVES, SIZES. ELEVATIONS, ETC. OF THE SYSTEM TO PROVIDE AN OPERATIONAL SYSTEM. THE SULFUR DIOXIDE AND CHLORINE SYSTEM INSIDE THE FIBERGLASS ENCLOSURE SHALL BE WALL MOUNTED. THE CONTRACTOR IS REQUIRED TO MAINTAIN THE GUIDELINES OF THE SCHEMATIC AND INCLUDE ANY ADDITIONAL FITTINGS OR VALVES NOT SHOWN IN THE SCHEMATIC TO PROVIDE AN OPERATIONAL SYSTEM.

ALL NECESSARY CHEMICAL FEED PLANT SHUT-DOWNS WILL BE COORDINATED WITH THE OPERATOR.

ALL PIPE SUPPORTS AND BRACING FOR ALL CHEMICAL FEED SYSTEMS (SULFUR DIOXIDE AND CHLORINE) SHALL BE STAINLESS STEEL WITH STAINLESS STEEL ANCHORS.

EXISTING CHLORINATION/DECHLORINATION HEADER BRACING TO REMAIN



CHLORINATION AND DECHLORINATION MECHANICAL PLAN
SCALE: N.T.S.

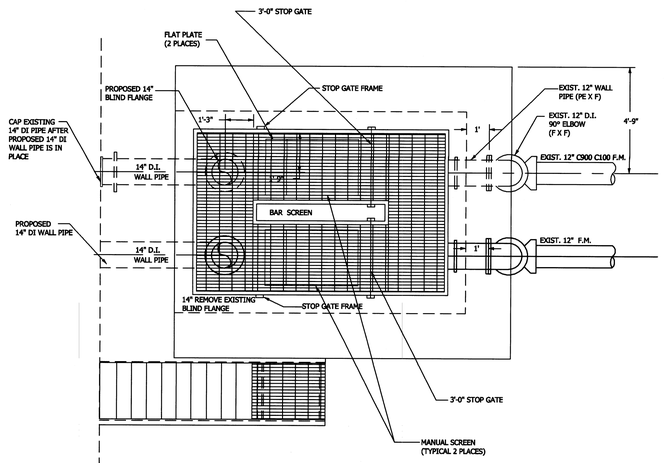
CHLORINE HOIST NOTES

1. MONORAIL (EXISTING S12X50 BEAM TO REMAIN)
   A. REPLACE NUTS & BOLTS TO COMPLY WITH ANSI B30.11-L3 2(B). USE BEVELED WASHERS.
2. REPLACE TROLLEY AND HOIST. SEE SECTION 46 7400-HOIST IN SPECIFICATIONS.
   A. EXISTING ELECTRIFICATION / POWER IS IN GOOD CONDITION.

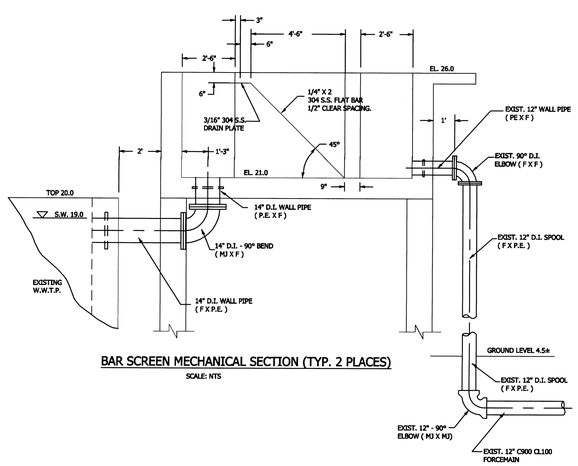
SULFUR DIOXIDE HOIST NOTES

1. MONORAIL (EXISTING S12X50 BEAM TO REMAIN)
   A. REPLACE NUTS & BOLTS TO COMPLY WITH ANSI-B 30.11-3.2(B) USE BEVELED WASHERS.
   B. REPLACE FESTOON HARDWARE AND WIRE. INSTALL DISCONNECT THAT IS READILY ACCESSIBLE TO PROVIDE A MEANS TO OPEN THE POWER CIRCUIT.
2. REPLACE TROLLEY AND HOIST. SEE SECTION 467400-HOIST IN SPECIFICATIONS.
   A. EXISTING ELECTRIFICATION / POWER IS IN GOOD CONDITION.

⚠1 NOTES:
ADDENDUM No1: PROVIDE DUAL SENSOR FOR CHLORINE AND SULFUR DIOXIDE LEAK DETECTORS.
ADD SECOND 14" D.I. WALL PIPE AS SHOWN IN BAR SCREEN MECHANICAL PLAN.



BAR SCREEN MECHANICAL PLAN
SCALE: NTS



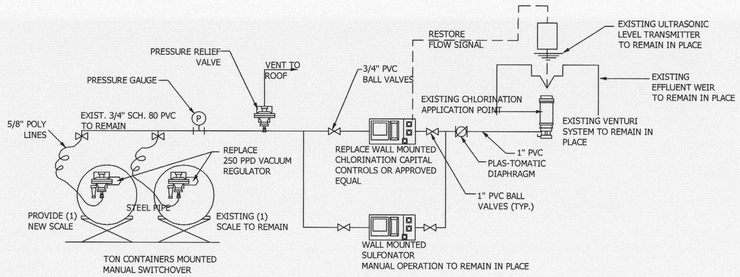
BAR SCREEN MECHANICAL SECTION (TYP. 2 PLACES)
SCALE: NTS

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED
PROFESSIONAL ENGINEER
Seal
10-3-16

Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

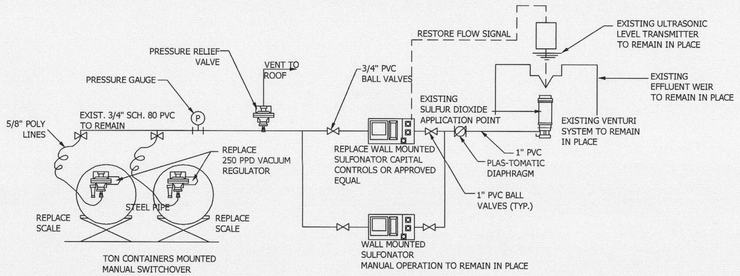
Laguna Madre Water District
Andy Bowie Wastewater Plant
Chlorination & Dechlorination Equipment

LAGUNA MADRE WATER DISTRICT



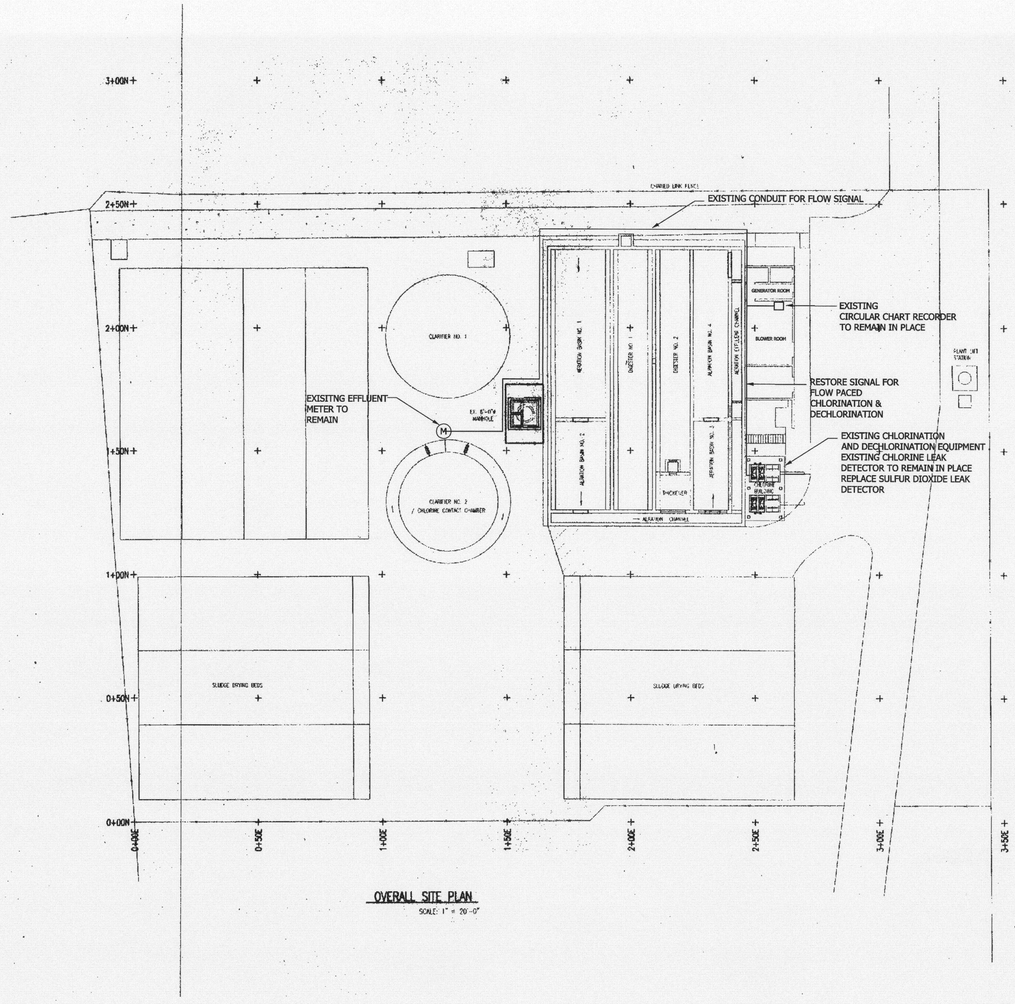
CHLORINATION SCHEMATIC

SCALE: N.T.S.



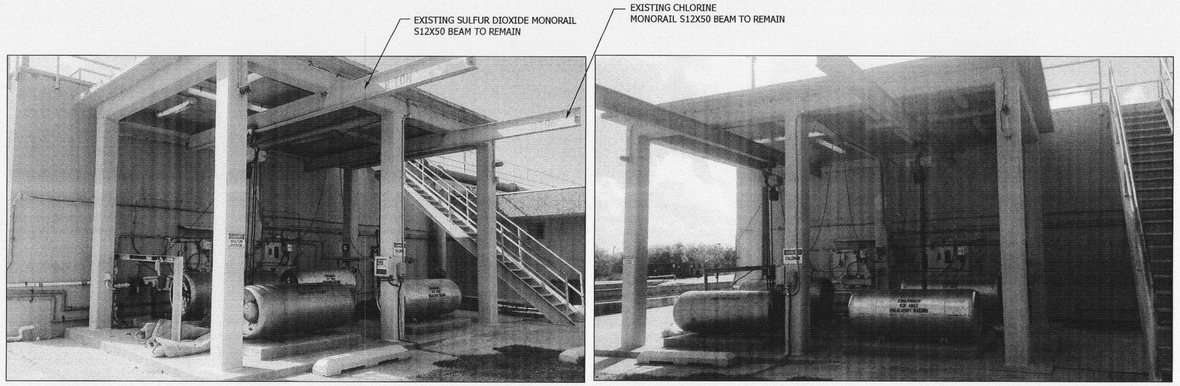
DECHLORINATION SCHEMATIC

SCALE: N.T.S.



OVERALL SITE PLAN

SCALE: 1" = 20'-0"



CHLORINE HOIST NOTES

1. MONORAIL (EXISTING S12X50 BEAM TO REMAIN)
   - A. REPLACE NUTS AND BOLTS TO COMPLY WITH ANSI-B30.11-1.3.1(b). USE BEVELED WASHERS
   - B. PROVIDE A NEW FESTOON SYSTEM FOR ELECTRIFICATON / POWER.
2. REPLACE TROLLEY AND HOIST. SEE SECTION 467400-HOIST IN SPECIFICATIONS.

SULFUR DIOXIDE HOIST NOTES

1. MONORAIL (EXISTING S12X50 BEAM TO REMAIN)
   - A. REPLACE NUTS AND BOLTS TO COMPLY WITH ANSI-B30.11-1.3.2(b). USE BEVELED WASHERS.
   - B. PROVIDE A NEW FESTOON SYSTEM FOR ELECTRIFICATION/POWER.
2. REPLACE TROLLEY AND HOIST. SEE SECTION 467400-HOIST IN SPECIFICATIONS.

⚠1 NOTES:
ADDENDUM No1: SIZE ALL PROPOSED ROTAMETERS FOR 250 PPD. DISTRICT DOES NOT USE INDUCTION PUMPS FOR CHLORINATION AND DECHLORINATION EQUIPMENT. EXISTING VENTURI SYSTEM TO REMAIN IN PLACE. AUTOMATIC SWITCHOVER REMOVED FROM ALL VACUUM REGULATORS. RESTORE EJECTORS AT ALL SITES.

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED
PROFESSIONAL ENGINEER
Charles F. Ortiz, P.E.
10-3-16
Seal

Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

Port Isabel WWTP
Chlorination & Dechlorination Equipment

LAGUNA MADRE WATER DISTRICT

DESIGN DATA

INFLUENT PARAMETERS

WET WEATHER PARAMETERS

30 Day - Average Wet Weather Flow	(mgd)	0.65
Peaking Factor		3.00
Two-Hour Peak Flow	(mgd)	1.95
Average BOD5	(mg/L)	200.00
Average TSS	(mg/L)	200.00
Average BOD5 Loading	(lbs/day)	1084.20
Average TSS Loading	(lbs/day)	1084.20

EFFLUENT PARAMETERS

Maximum Average BOD5	(mg/L)	10.00
Maximum Average TSS	(mg/L)	15.00
Minimum Dissolved Oxygen	(mg/L)	4.00

AERATION BASIN DESIGN

AERATION BASIN

Length	(ft)	120.00
Width	(ft)	80.00
Side Water Depth	(ft)	9.00
Volume Available	(cu. ft.)	86400.00
	(gallons)	646,272
Existing Design Organic Loading	(lb BOD5/day/1000 cf)	12.55
State required Organic loading	(lb BOD5/day/1000 cf)	45.00

AERATION REQUIREMENTS

Design Organic Loading	(lbs/day)	1084.20
State Air Criteria	(lb O2 required/lb BOD5	1.20
lb O2 required for BOD5	(lbs/day)	1301.04
STATE CRITERIA AIR REQM'TS	**(lbs/day)**	**1301.04**
State Coarse Bubble O2 Transfer Factor Req'mt		0.65
Clean Water Transfer Efficiency (Manufacturer)	#NAME?	10.00%
Wastewater transfer efficiency	(%)	6.50%
State Criteria for Air Requirements	(cu. ft/minute)	805.80
STATE CRITERIA AIR REQM'TS	**(cu. ft/minute)**	**805.80**

CLARIFIER DESIGN

Two-Hour Peak Flow	(mgd)	1.95
Existing Number of Clarifiers		2.00
Existing Diameter for each Clarifier	(ft)	46.00
Existing Surface Area per Clarifier at Peak Flow	(sq. ft.)	1661.91
Existing Surface Loading at Peak Flow	(gpd/sq. ft.)	586.68
State req'd Max Surface loading at Peak flow	(gpd/sq. ft.)	800.00
Existing Surface Loading at Design Flow	(gpd/sq. ft.)	195.56
State req'd Max Surface loading at Design flow	(gpd/sq. ft.)	600.00
Existing Side Water Depth	(ft)	12.00
Total Existing Surface Area	(sq. ft.)	3323.81
Total Clarifier Volume	(cu. ft.)	39885.75
	(gallons)	298345.44
State required Detention Time at Peak Flow	(hours)	1.50
Actual Detention Time at Peak Flow	(hours)	3.67
State required Detention Time at Design Flow	(hours)	3.00
Actual Detention Time at Design Flow	(hours)	11.02

RETURN ACTIVATED SLUDGE UNDERFLOW RATE

Under Flow Rate	(gpd/sq. ft. of clarifier)	400.00
RAS Flow for each Clarifier	(gpd)	1329525.12
	(gpm)	923.28
Existing Maximum RAS Flow per Clarifier	(gpm)	780.00

AEROBIC DIGESTERS VOLUME

AEROBIC DIGESTER BASIN NO. 1

Length of Basin	(ft)	44.00
Width of Basin	(ft)	22.00
Side Water Depth	(ft)	14.00
Volume of Basin	(cu. ft.)	13552.00
	(gallons)	101368.96
Total Digestion Volume Proposed	(cu. ft.)	13552.00
	(gallons)	101368.96

SLUDGE PRODUCTION

Influent BOD Loading	(lbs/day)	1084.20
Effluent BOD Loading	(lbs/day)	54.21
BOD Removed from Process (Sr)	(lbs/day)	1029.99
Design SRT (Om)	(Days)	8.00
Design MLSS	(mg/L)	4200.00
Aeration Volume Available	(mg)	0.101
Gross Yield Coefficient (Y)	(mg VSS/mg BOD)	0.60
Decay Coefficient (Kd)	(day-1)	0.060
Biological Solids Production(lbs VSS/day)	(Px=Y*Sr/(1+(Kd*Om)	417.56
% Non-Volatile SS from influent SS(INV)	(%)	45%
Non-Volatile SS into Process (INV)	(lbs/day)	487.89
Effluent SS (Et)	(lbs/day)	81.32
Waste_Activated Sludge Production (WAS)	(lbs/day)	824.14
Solids Yield (y)	(lbs TSS/lbs BOD)	0.80
Total Solids Production	(lbs of TSS)	6593.11
Solids Allowed in Aeration Basin	(lbs of TSS)	3550.75
Percent of VSS in Sludge Produced	(%)	80.00%
Percent Destruction of VSS	(%)	38.00%
Sludge Produced for Dewatering	(lbs/day)	573.60
Solids % Concentration in Digesters	(%)	2.00%
Sludge Retention Time in Digesters	(Days)	29

AEROBIC DIGESTERS AIR REQUIREMENTS

State Criteria air requirements for Digesters	(scfm/1000 cu. ft.)	30.00
State Criteria air required for Digesters	**(scfm)**	**406.56**

CHLORINATION CONTACT TIME REQUIREMENTS

Peak Flow Through Chamber	(mgd)	1.95
Existing No. of Chambers		2.00
Existing Length of Each Chamber	(ft)	22.00
Existing Width of Each Camber	(ft)	11.00
Existing Surface Water Depth	(ft)	10.00
Existing Total Chlorine Contact Volume		4840.00
	(gallons)	36203.20
State required Contact Time at Peak Flow	(minutes)	20
Existing Contact Time at Peak Flow	(minutes)	27
Existing Volume for Chlorination	(gallons)	36203.20
	(cu. ft.)	4840.00

CHLORINATION AIR REQUIREMENTS

DO level required before discharge	(mg/L)	4.00
lbs of O2 required in Chlorination chamber (AOR)	(lbs/day)	65.05
State Coarse Bubble O2 Transfer Factor Req'mt		0.65
Clean Water Transfer Efficiency	#NAME?	10.00%
Wastewater transfer efficiency	(%)	6.50%
AIR REQUIREMENTS FOR CHLORINATION	**(cu. ft/minute)**	**40.29**

CHLORINATOR CAPACITY REQUIREMENTS

Peak Flow	mgd	1.95
Chlorine Dosage	mg/L	10.00
Chlorinator Capacity Required at Peak Flow	lbs/day	162.63
Existing Number of Chlorinator Feeders		2.00
Capacity fo each Chlorine Feeder	lbs/day	500.00

AIR LIFT PUMPS AIR REQUIREMENTS

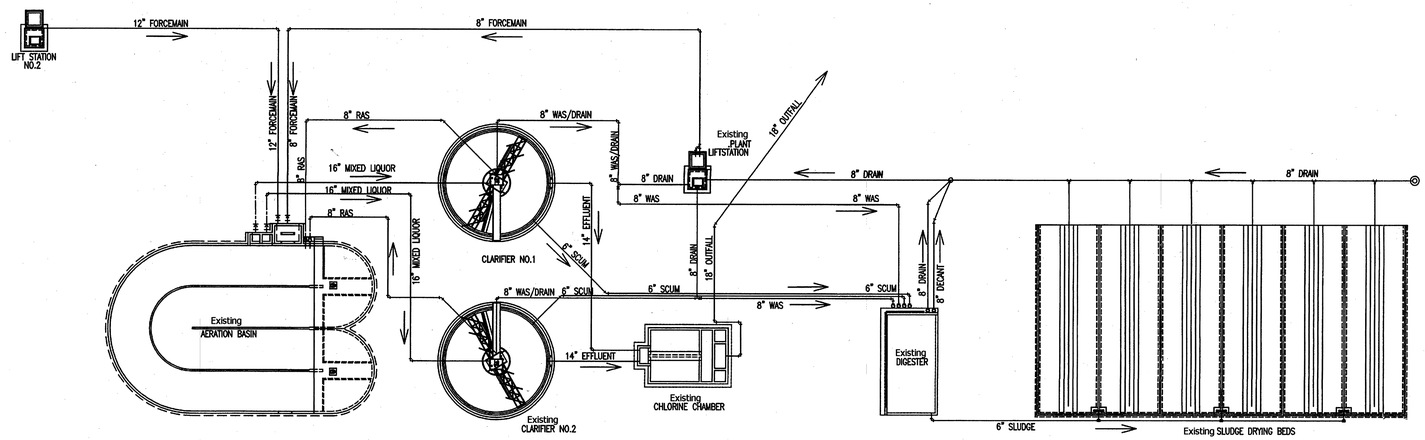
Number of 6" airlift pumps		2.00
Number of 10" airlift pumps		1.00
Air requirements per 6" airlift pump	(scfm)	25.00
Air requirements per 10" airlift pump	(scfm)	100.00
Air requirements for all 6" airlift pumps	(scfm)	50.00
Air requirements for all 10" airlift pumps	(scfm)	100.00
Total air requirements for airlift pumps	(scfm)	150.00

TOTAL AIR REQUIREMENTS

AERATION REQUIREMENTS	(SCFM)	805.80
DIGESTION REQUIREMENTS	(SCFM)	406.56
CHLORINATION REQUIREMENTS	(SCFM)	40.29
AIR LIFT PUMPS REQUIREMENTS	(SCFM)	150.00
TOTAL AIR REQUIREMENTS	(SCFM)	~~1402.65~~ 1402.65

NOTE: AIR IS SUPPLIED BY TWO (2) BLOWERS RATED EACH AT A DESIGN FLOW OF 844 CFM AT 6.8 PSIG WITH 40 H.P. MOTORS. ONE (1) BLOWER WILL REMAIN IN PLACE. PROPOSED ONE (1) BLOWER AT A DESIGN FLOW OF 600 CFM AT 6.8 PSIG WITH 30 H.P. MOTOR.

1 NOTES
ADDENDUM No.1: CHANGED "PROPOSED" TO "EXISTING" AS NEEDED TO SHOW EXISTING CONDITIONS. REVISED PROPOSED HIGH SPEED TURBO BLOWER, MODEL No. TO NX30-C050 OR APPROVED EQUAL.



PROCESS FLOW SCHEMATIC

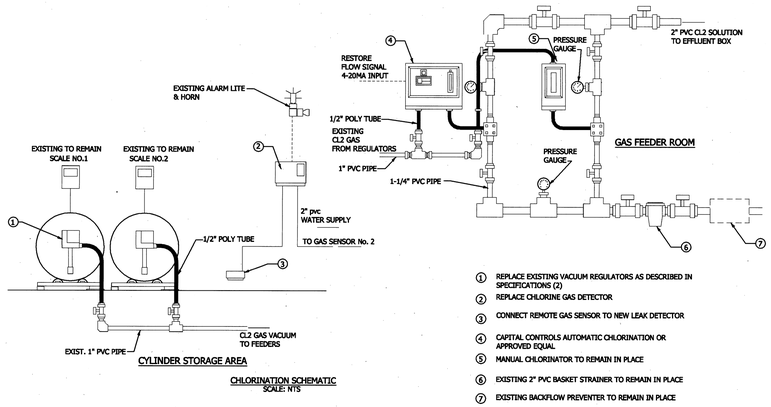
SCALE: N.T.S.

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED
PROFESSIONAL ENGINEER
Seal
10-3-16

Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

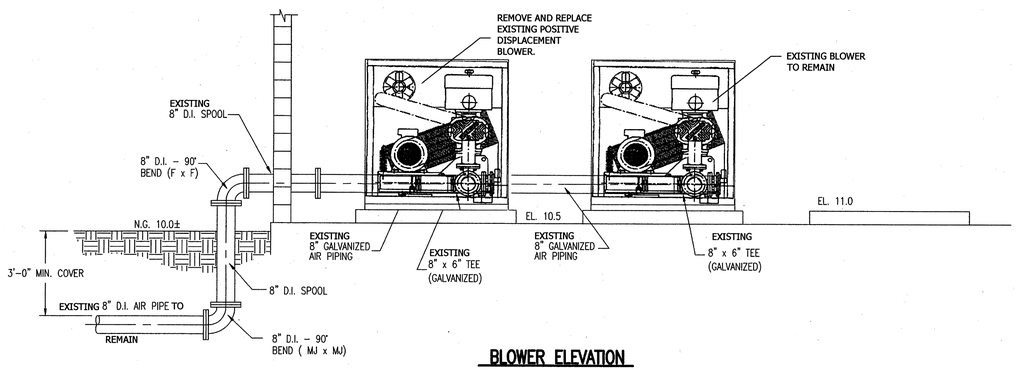
Laguna Vista WWTP
Design Data And Process Schematic

LAGUNA MADRE WATER DISTRICT

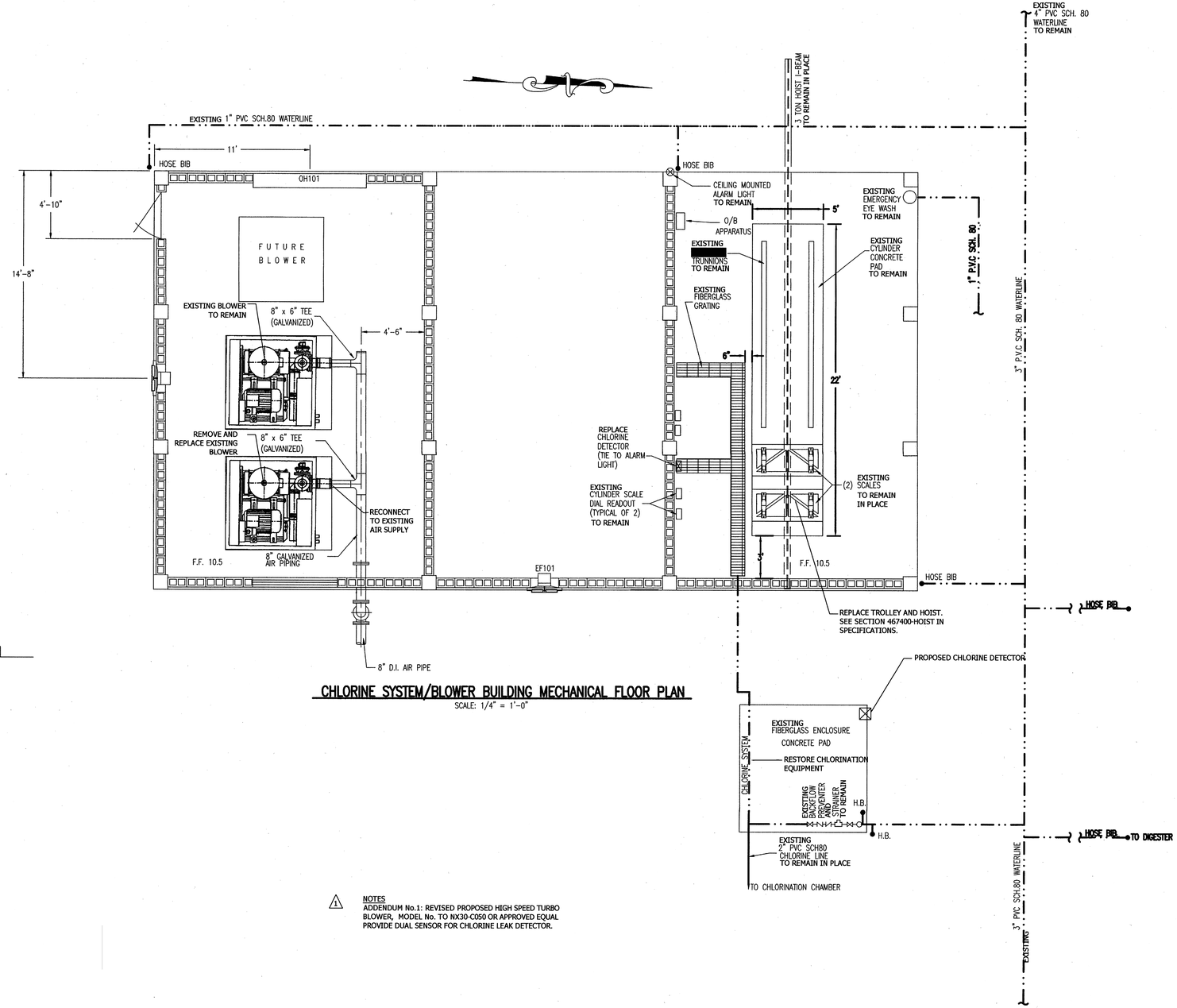


CHLORINATION SCHEMATIC
SCALE: NTS

1. REPLACE EXISTING VACUUM REGULATORS AS DESCRIBED IN SPECIFICATIONS (2)
2. REPLACE CHLORINE GAS DETECTOR
3. CONNECT REMOTE GAS SENSOR TO NEW LEAK DETECTOR
4. CAPITAL CONTROLS AUTOMATIC CHLORINATION OR APPROVED EQUAL
5. MANUAL CHLORINATOR TO REMAIN IN PLACE
6. EXISTING 2" PVC BASKET STRAINER TO REMAIN IN PLACE
7. EXISTING BACKFLOW PREVENTER TO REMAIN IN PLACE



BLOWER ELEVATION
SCALE: 3/8" = 1'-0"



CHLORINE SYSTEM/BLOWER BUILDING MECHANICAL FLOOR PLAN
SCALE: 1/4" = 1'-0"

⚠1 NOTES
ADDENDUM No.1: REVISED PROPOSED HIGH SPEED TURBO BLOWER, MODEL No. TO NX30-C050 OR APPROVED EQUAL
PROVIDE DUAL SENSOR FOR CHLORINE LEAK DETECTOR.

STATE OF TEXAS
CHARLES F. ORTIZ
89425
LICENSED PROFESSIONAL ENGINEER
P.E.
10-3-16
Seal

Laguna Madre Water District
Wastewater Treatment Plants Rehabilitation
September 2016

Laguna Vista WWTP
Chlorine System Feed/Blower
Building Mechanical Modifications

LAGUNA MADRE WATER DISTRICT