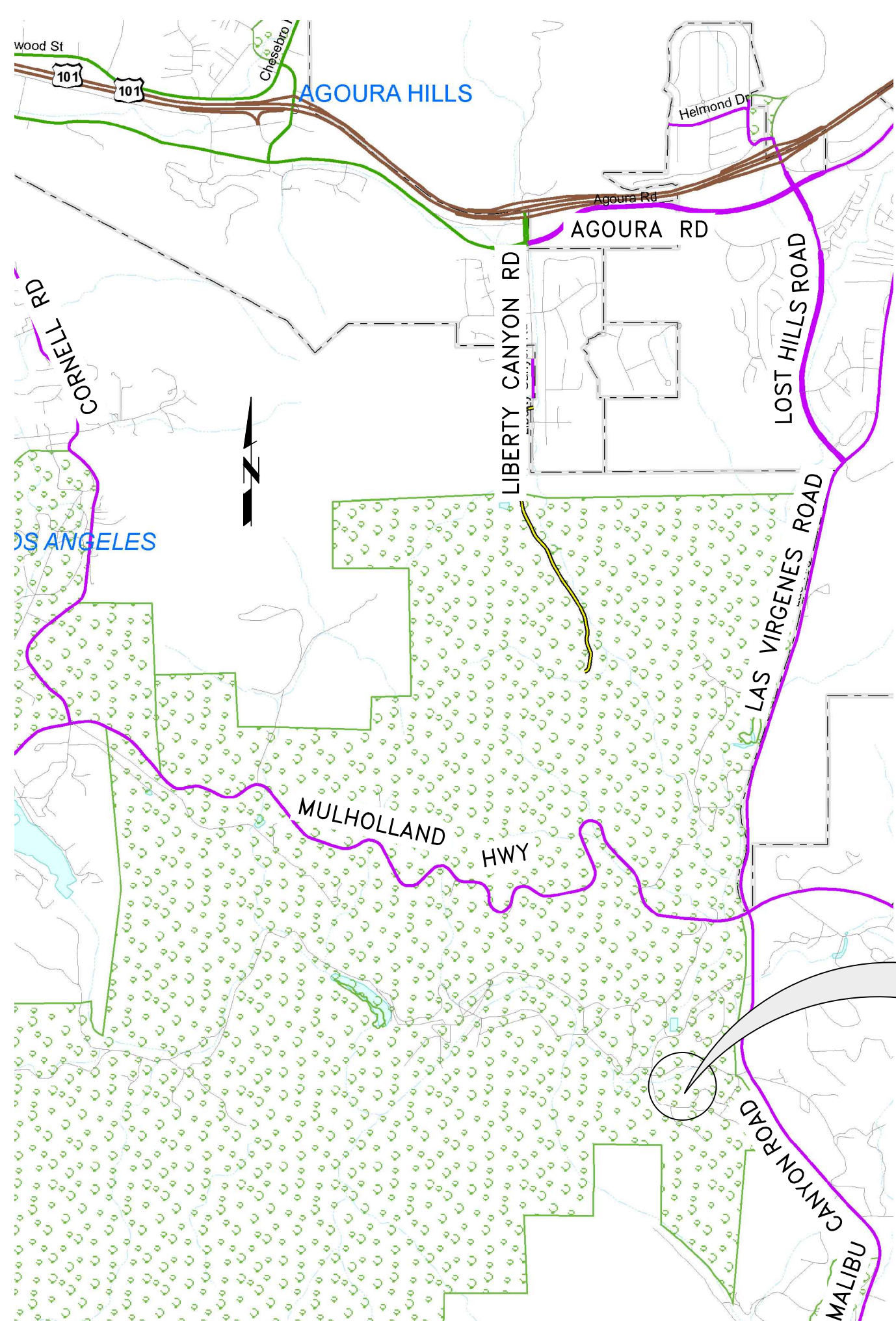


LAS VIRGENES MUNICIPAL WATER DISTRICT & TRIUNFO SANITATION DISTRICT JOINT POWERS AUTHORITY

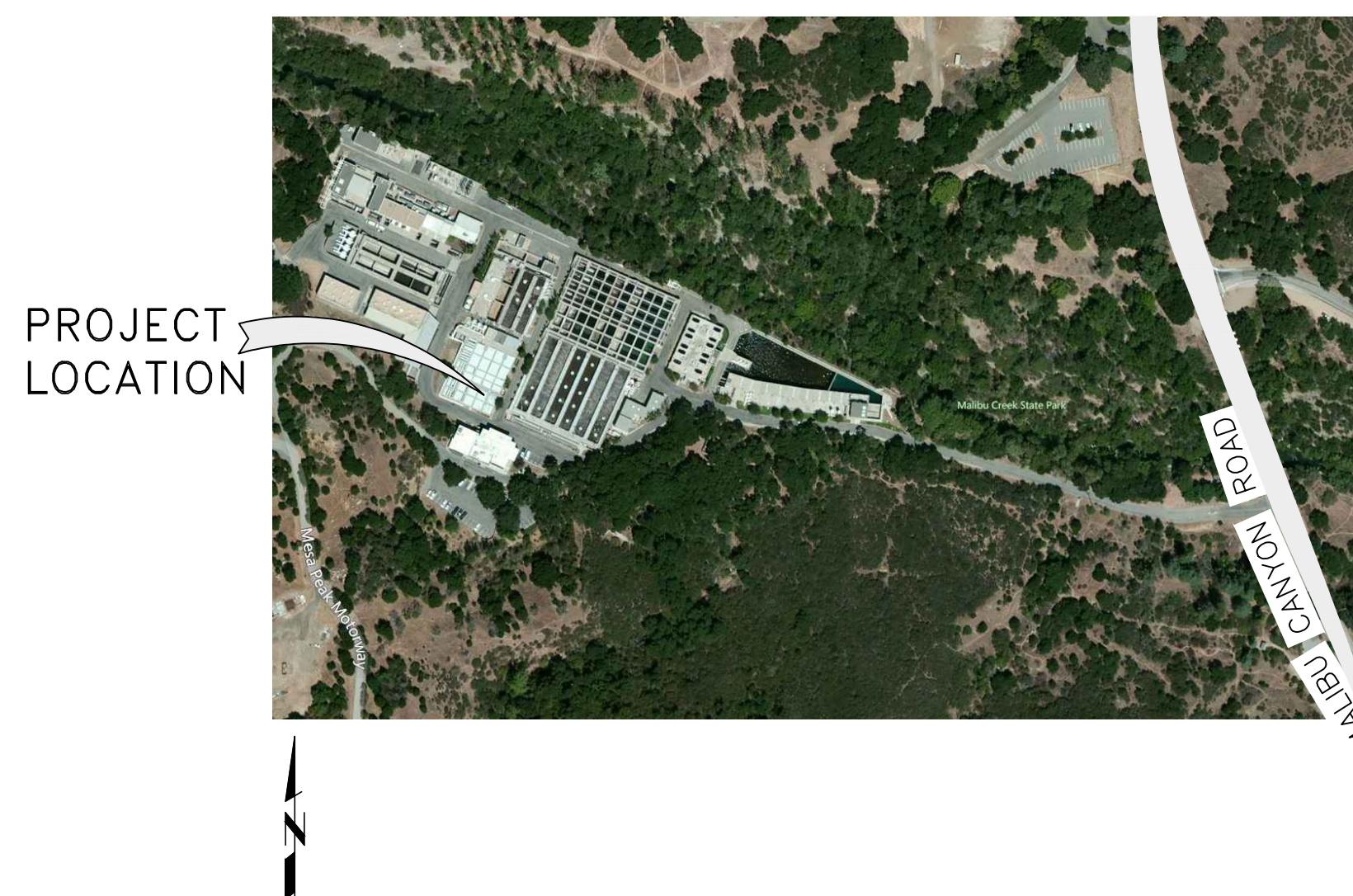


TAPIA WATER RECLAMATION FACILITY CHANNEL MIXING IMPROVEMENTS SEPTEMBER 2014

VICINITY MAP
NOT TO SCALE



LOCATION MAP
NOT TO SCALE



PROJECT LOCATION
731 MALIBU CANYON ROAD
CALABASAS, CA 91302

SHEET INDEX

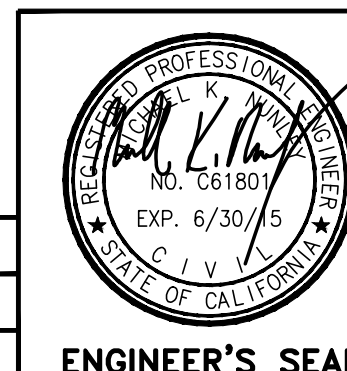
NUMBER	TITLE	DESCRIPTION
1	G-1	TITLE SHEET
2	G-2	SCHEDULES, SITE PLAN, AND NOTES
3	C-1	GRIT CHAMBER EFFLUENT CHANNEL PLAN
4	C-2	PRIMARY CLARIFIER FEED CHANNEL PLAN
5	C-3	ACTIVATED SLUDGE BASIN FEED CHANNEL PLAN
6	C-4	RETURN ACTIVATED SLUDGE (RAS) CHANNEL PLAN
7	C-5	MIXED LIQUOR SUSPENDED SOLIDS (MLSS) CHANNEL PLAN
8	D-1	DETAILS
9	D-2	DETAILS
10	D-3	DETAILS

RED LINE SET

G-1

LAS VIRGENES MWD – TRIUNFO SD JPA	
TAPIA WATER RECLAMATION FACILITY CHANNEL MIXING IMPROVEMENTS	
TITLE SHEET	
PREPARED BY: 	MNS ENGINEERS, INC. 4580 E. Thousand Oaks Blvd. Suite 101 Westlake Village, CA 91362
SCALE: HORIZONTAL: AS SHOWN VERTICAL: AS SHOWN	DATE: SEPTEMBER 2014 SHEET 1 OF 10

DESIGN: MKN
DRAWN: STU
CHECKED: JA



ENGINEER'S SEAL

REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				

GENERAL NOTES

1. LOCATIONS AND DIMENSIONS OF EXISTING STRUCTURES, PIPING, VALVES, AND APPURTENANCES ARE BASED ON RECORD DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATION, DIMENSIONS, AND ELEVATIONS OF EXISTING PIPING, EQUIPMENT, SLABS, AND APPURTENANCES PRIOR TO BID. IF ANY DISCREPANCIES EXIST BETWEEN PLANS AND EXISTING FACILITIES THAT WOULD AFFECT PROPOSED IMPROVEMENTS, CONTRACTOR WILL NOTIFY THE JPA IMMEDIATELY.
2. CONTRACTOR WILL WORK WITH JPA TO IDENTIFY STAGING AREAS WITHIN JPA PROPERTY OR ON ADJACENT PROPERTY. STAGING AREAS TO BE DETERMINED DURING PRE-CONSTRUCTION MEETING.
3. PLANT SHUTDOWNS OR OPERATIONAL MODIFICATIONS TO BE COORDINATED WITH JPA STAFF PER SECTION 15800.
4. CONTRACTOR MAY USE ONSITE NON-POTABLE WATER IF REQUESTED. VOLUME, FLOW, AND TIMING MUST BE APPROVED BY JPA STAFF.
5. CONTRACTOR TO PROVIDE COMMUNICATIONS AND PORTABLE RESTROOM FACILITIES.
6. CHANNELS ARE CONSIDERED CONFINED SPACES. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS AND PROCEDURES REQUIRED FOR CONFINED SPACE ENTRY AND SAFETY AND COMPLIANCE WITH THE DISTRICT'S CONFINED SPACE PROGRAM.
7. CONTRACTOR TO PROTECT ALL EXISTING SURFACES, PIPES, VALVES, EQUIPMENT, BRACKETS, HARDWARE, AND OTHER ITEMS IN THE VICINITY OF WORK AREAS.
8. REPLACE EXISTING AIR FLOW METERS WITH FLOW CONDITIONING ELEMENTS PER DETAIL 1, SHEET D-3. ALL FLANGES, FLOW ELEMENTS, CONDUIT, AND VALVES ASSOCIATED WITH FLOW METERS TO BE REMOVED AND OFFERED TO DISTRICT FOR SALVAGE OR TO BE DISPOSED BY CONTRACTOR AS DIRECTED.

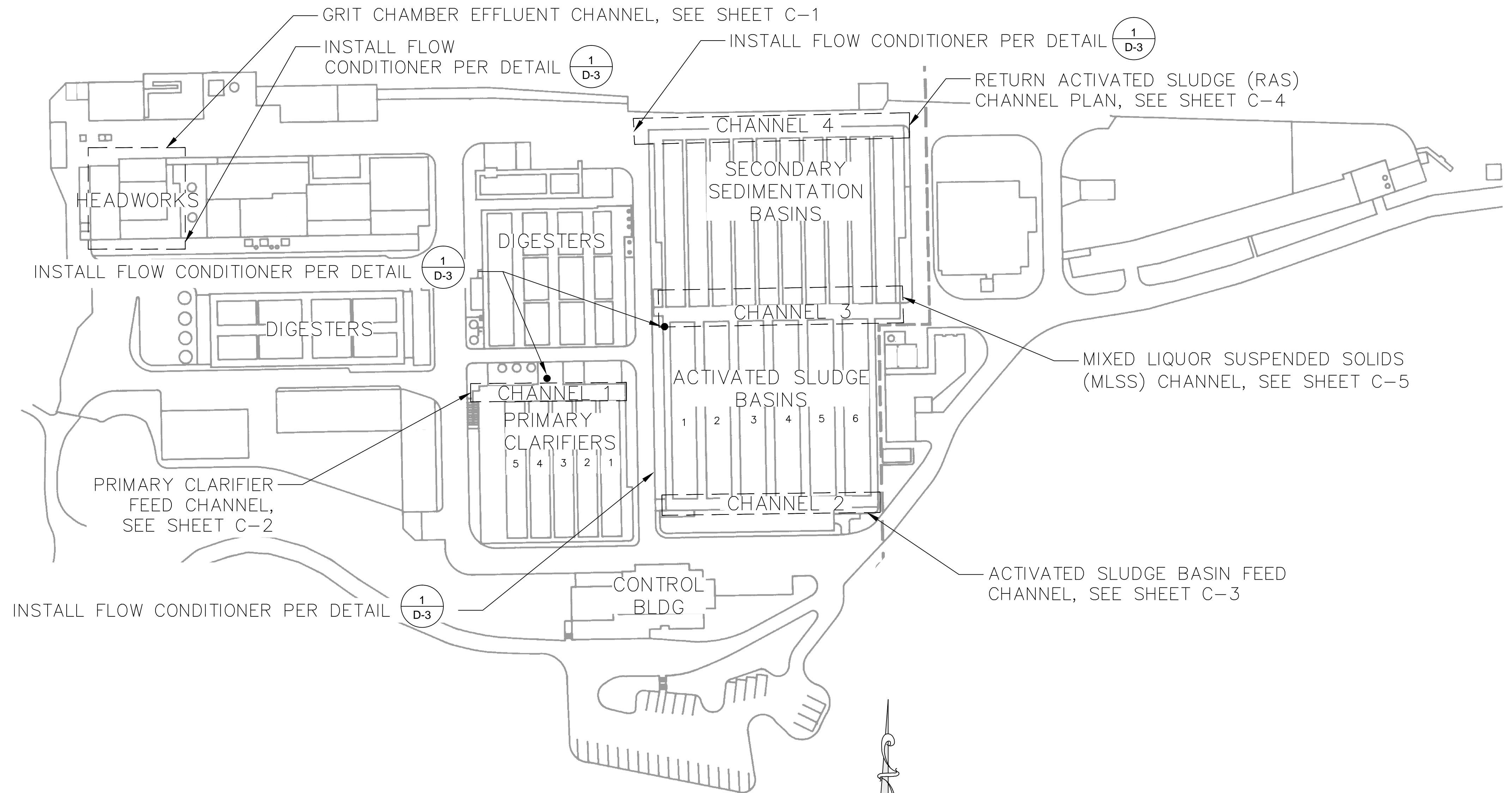
MANIFOLD MATERIAL AND EQUIPMENT SCHEDULE

ITEM	MATERIAL	SPECIFICATION SECTION
CHANNEL AIR HEADER PIPE	304 SS	402076
PIPE SUPPORTS AND HARDWARE	304 SS	400764
DIFFUSER DROP PIPE	304 SS	402076
COARSE AIR DIFFUSERS	PVC	402090, 444213

DIFFUSER SCHEDULE

PLANT CHANNEL NUMBER	LOCATION	SHEET #	DESIGN AIR FLOW (CFM)	APPROX. CHANNEL DIMENSIONS (FEET)			HEADER PIPE DIA. (INCHES)	DROP PIPE DIA. (INCHES)	NUMBER OF DROPS	NUMBER OF UNITS/TYPE	MAX DIFFUSER SEPARATION (FEET)	DETAIL NUMBER	HEADER PIPE SUPPORT TYPE ¹
				LENGTH (FEET)	WIDTH (FEET)	DEPTH (FEET)							
	GRIT CHAMBER EFFLUENT CHANNEL	C-1	400	64	5	8.5	6	3	5	9 DUPLEX	5	1 D-1	A
CHANNEL NO. 1	PRIMARY CLARIFIER FEED CHANNEL	C-2	1,000	130	8	10	8	4	5	26 DUPLEX	5	2 D-1	C
CHANNEL NO. 2	ACTIVATED SLUDGE BASIN FEED CHANNEL	C-3	500	190	8	7	6	3	7	37 SIMPLEX	5	3 D-1	C
CHANNEL NO. 4	RETURN ACTIVATED SLUDGE CHANNEL	C-4	400	209	5	9.5	6	3	10	21 DUPLEX	5	1 D-1	B
CHANNEL NO. 3	MIXED LIQUOR SUSPENDED SOLIDS CHANNEL	C-5	400	208	10	8	6	3	10	45 SIMPLEX	5	3 D-1	C

¹SEE DETAIL 2 D-2 FOR PIPE SUPPORT DESIGN.



1 SITE PLAN
NOT TO SCALE

FLOW CONDITIONER SCHEDULE

AIR PIPING SUBSYSTEM	FLOW CONDITIONER DIAMETER (INCHES)
GRIT CHAMBER EFFLUENT CHANNEL	6"
PRIMARY CLARIFIER CHANNEL	4"
SELECTOR CHANNEL	3"
MLSS CHANNEL	6"
RAS CHANNEL	6"

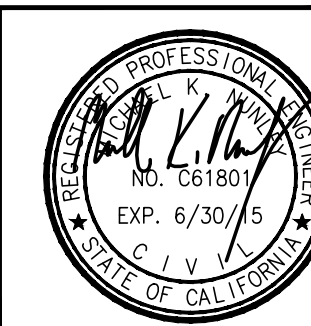
G-2

LAS VIRGENES MWD – TRIUNFO SD JPA
TAPIA WATER RECLAMATION FACILITY
CHANNEL MIXING IMPROVEMENTS PROJECT
 SCHEDULES, SITE PLAN,
 AND NOTES

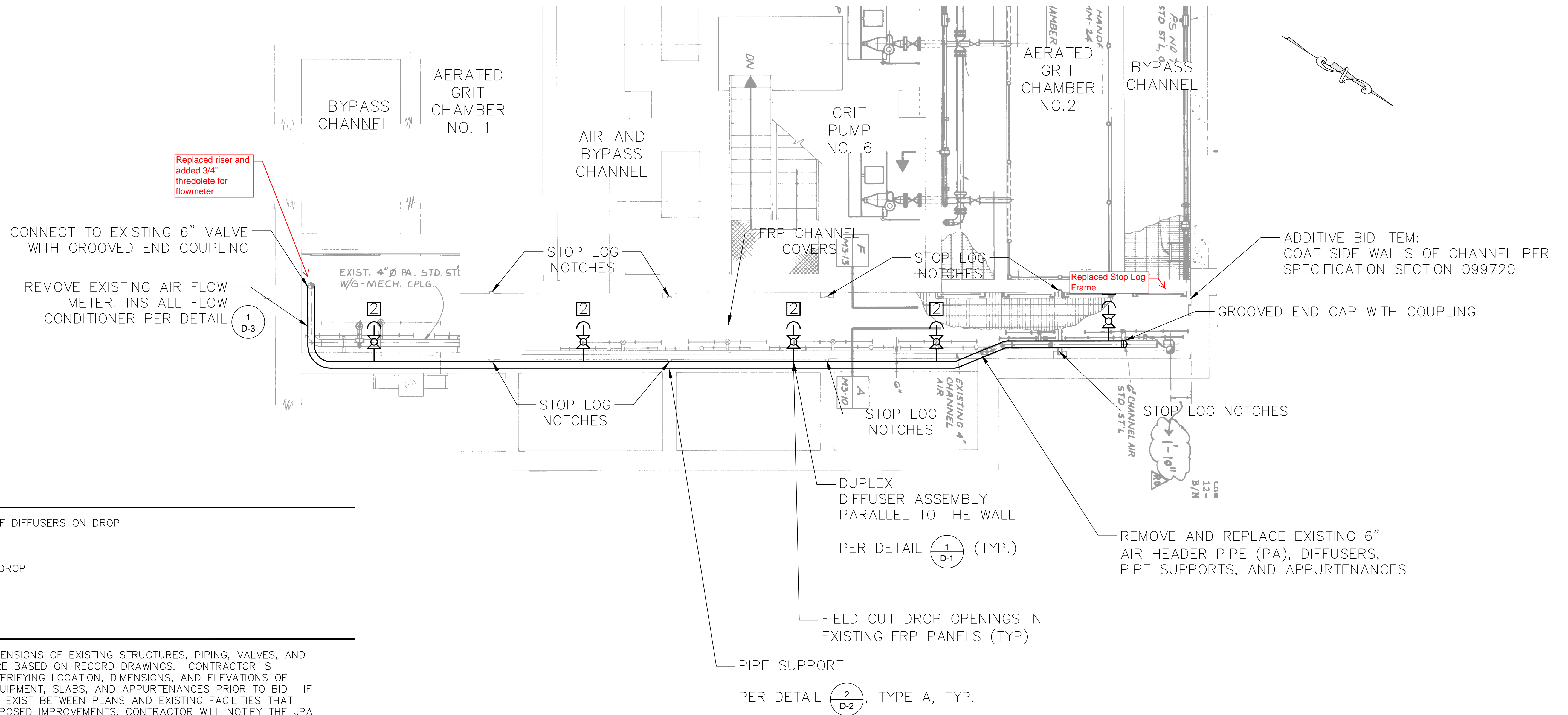
PREPARED BY:
 **MNS ENGINEERS, INC.**
 4580 E. Thousand Oaks Blvd.
 Suite 101
 Westlake Village, CA 91362

SCALE: HORIZONTAL: AS SHOWN DATE: **SEPTEMBER 2014** SHEET **2** OF **10**
 VERTICAL: AS SHOWN

DESIGN: **MKN**
 DRAWN: **STU**
 CHECKED: **JA**



REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				



LEGEND

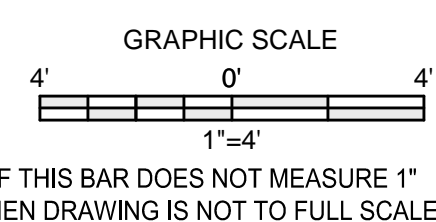
- # - NUMBER OF DIFFUSERS ON DROP
- DIFFUSER DROP

GENERAL NOTES

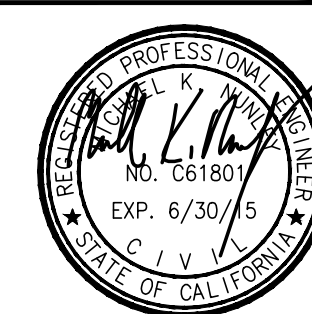
1. LOCATIONS AND DIMENSIONS OF EXISTING STRUCTURES, PIPING, VALVES, AND APPURTENANCES ARE BASED ON RECORD DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATION, DIMENSIONS, AND ELEVATIONS OF EXISTING PIPING, EQUIPMENT, SLABS, AND APPURTENANCES PRIOR TO BID. IF ANY DISCREPANCIES EXIST BETWEEN PLANS AND EXISTING FACILITIES THAT WOULD AFFECT PROPOSED IMPROVEMENTS, CONTRACTOR WILL NOTIFY THE JPA IMMEDIATELY.
2. PLANT SHUTDOWNS OR OPERATIONAL MODIFICATIONS TO BE COORDINATED WITH JPA STAFF PER SECTION 015800.
3. CHANNELS ARE CONSIDERED CONFINED SPACES. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS AND PROCEDURES REQUIRED FOR CONFINED-SPACE ENTRY AND SAFETY AND COMPLIANCE WITH THE DISTRICT'S CONFINED SPACE PROGRAM.
4. CONTRACTOR TO PROTECT ALL EXISTING SURFACES, PIPES, VALVES, EQUIPMENT, BRACKETS, HARDWARE, AND OTHER ITEMS IN THE VICINITY OF WORK AREAS.

NOTES

1. DROP LOCATIONS SHOWN ARE APPROXIMATE. LOCATIONS SHOULD BE CONFIRMED WITH THE DIFFUSER MANUFACTURER BASED ON REQUIRED AIR FLOW.
2. UNLESS OTHERWISE INDICATED, SPACING BETWEEN DIFFUSERS SHALL BE 5 FEET.
3. CONTRACTOR SHALL ALIGN DIFFUSER ASSEMBLIES TO AVOID CONFLICTS WITH STOP GATES.



DESIGN: MKN
 DRAWN: STU
 CHECKED: JA



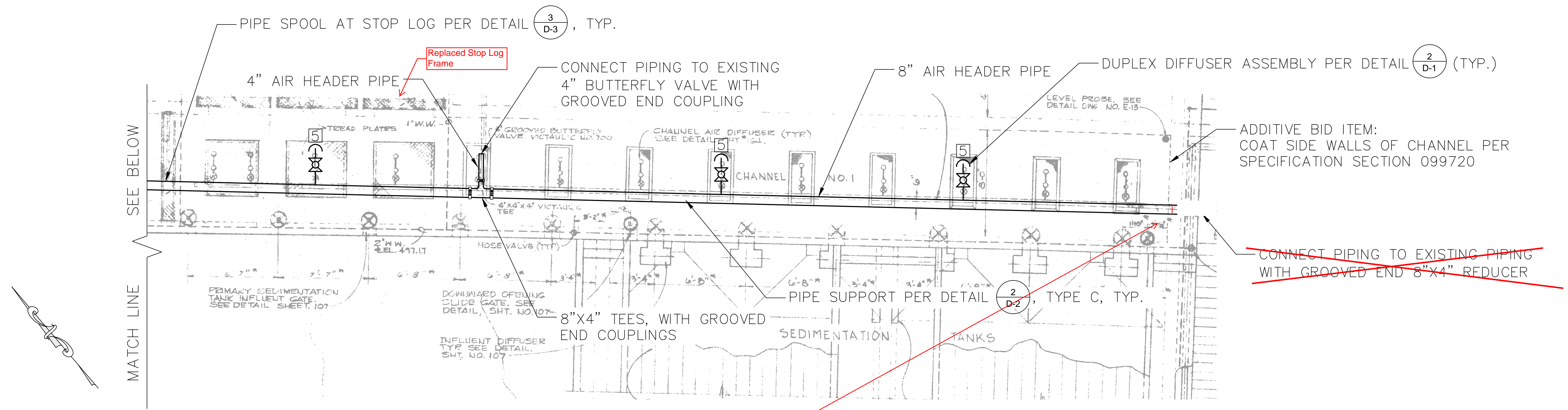
REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				

C-1

**LAS VIRGENES MWD – TRIUNFO SD JPA
 TAPIA WATER RECLAMATION FACILITY
 CHANNEL MIXING IMPROVEMENTS PROJECT
 GRIT CHAMBER EFFLUENT CHANNEL
 PLAN**

PREPARED BY: MNS ENGINEERS, INC.
 4580 E. Thousand Oaks Blvd.
 Suite 101
 Westlake Village, CA 91362

SCALE: HORIZONTAL: AS SHOWN DATE: SEPTEMBER 2014 SHEET 3 OF 10
 VERTICAL: AS SHOWN



LEGEND

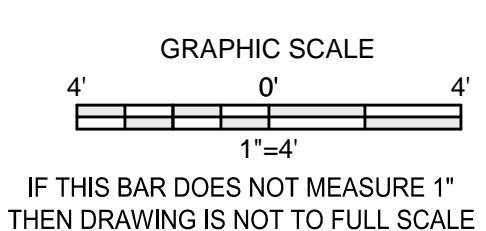
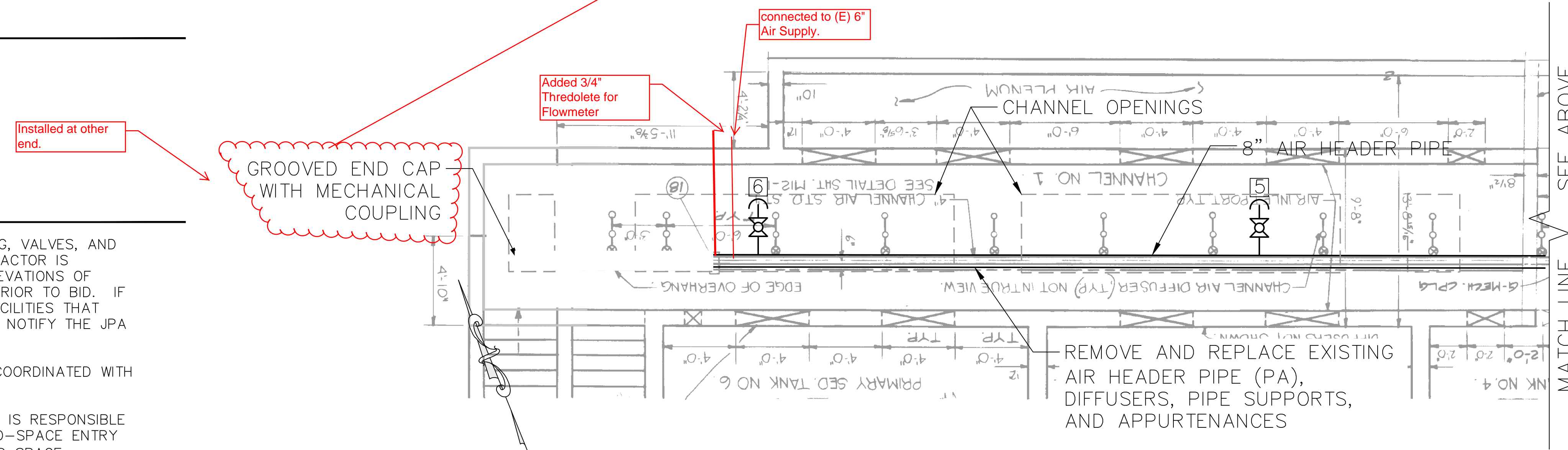
- # - NUMBER OF DIFFUSERS ON DROP
- (D) - DIFFUSER DROP

GENERAL NOTES

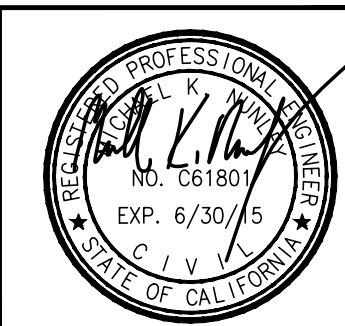
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4. CONTRACTOR TO PROTECT ALL EXISTING SURFACES, PIPES, VALVES, EQUIPMENT, BRACKETS, HARDWARE, AND OTHER ITEMS IN THE VICINITY OF WORK AREAS.

NOTES

1. DROP LOCATIONS SHOWN ARE APPROXIMATE. LOCATIONS SHOULD BE CONFIRMED WITH THE DIFFUSER MANUFACTURER BASED ON REQUIRED AIR FLOW.
2. UNLESS OTHERWISE INDICATED, SPACING BETWEEN DIFFUSERS SHALL BE 5 FEET.
3. CONTRACTOR SHALL ALIGN DIFFUSER ASSEMBLIES TO AVOID CONFLICTS WITH STOP GATES.



DESIGN: MKN
 DRAWN: STU
 CHECKED: JA



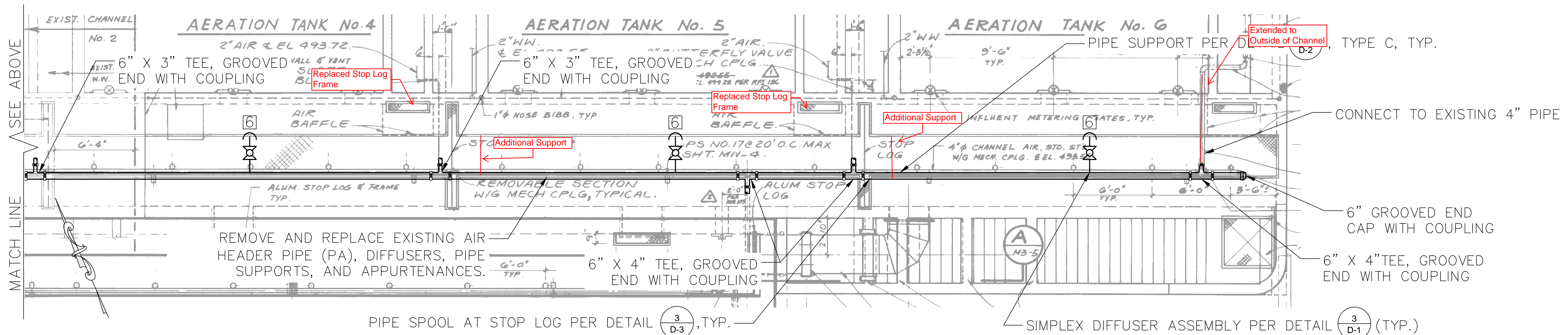
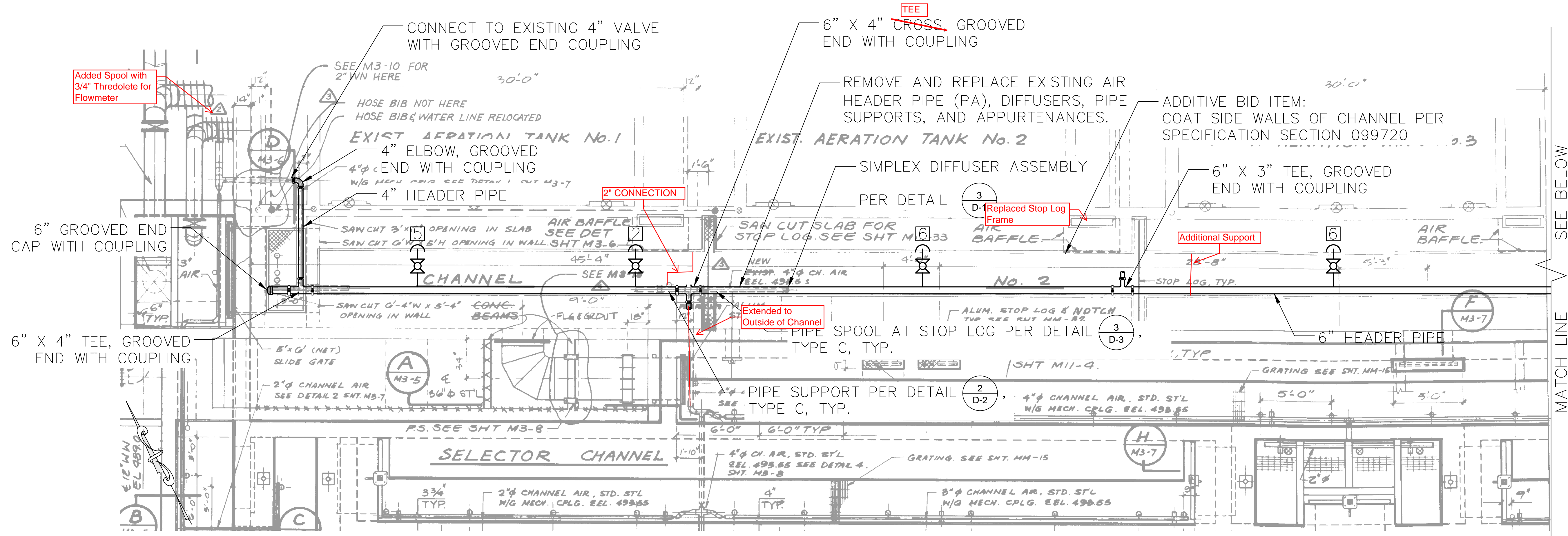
REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				

C-2

**LAS VIRGENES MWD – TRIUNFO SD JPA
 TAPIA WATER RECLAMATION FACILITY
 CHANNEL MIXING IMPROVEMENTS PROJECT
 PRIMARY CLARIFIER FEED CHANNEL
 PLAN**

PREPARED BY: **MNS ENGINEERS, INC.**
 4580 E. Thousand Oaks Blvd.
 Suite 101
 Westlake Village, CA 91362

SCALE: HORIZONTAL: AS SHOWN DATE: **SEPTEMBER 2014**
 VERTICAL: AS SHOWN SHEET **4** OF **10**



GENERAL NOTES

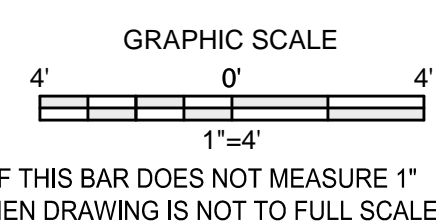
- LOCATIONS AND DIMENSIONS OF EXISTING STRUCTURES, PIPING, VALVES, AND APPURTENANCES ARE BASED ON RECORD DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATION, DIMENSIONS, AND ELEVATIONS OF EXISTING PIPING, EQUIPMENT, SLABS, AND APPURTENANCES PRIOR TO BID. IF ANY DISCREPANCIES EXIST BETWEEN PLANS AND EXISTING FACILITIES THAT WOULD AFFECT PROPOSED IMPROVEMENTS, CONTRACTOR WILL NOTIFY THE JPA IMMEDIATELY.
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NOTES

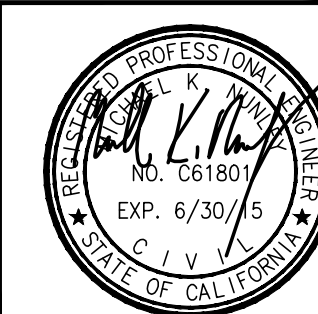
- DROP LOCATIONS SHOWN ARE APPROXIMATE. LOCATIONS SHOULD BE CONFIRMED WITH THE DIFFUSER MANUFACTURER BASED ON REQUIRED AIR FLOW. DIFFUSER ASSEMBLIES SHALL BE ACCESSIBLE FOR REMOVAL.
- UNLESS OTHERWISE INDICATED, SPACING BETWEEN DIFFUSERS SHALL BE 5 FEET.
- CONTRACTOR SHALL ALIGN DIFFUSER ASSEMBLIES TO AVOID CONFLICTS WITH STOP GATES.

LEGEND

- # - NUMBER OF DIFFUSERS ON DROP
- ⊕ - DIFFUSER DROP



DESIGN: MKN
 DRAWN: STU
 CHECKED: JA



REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				

C-3

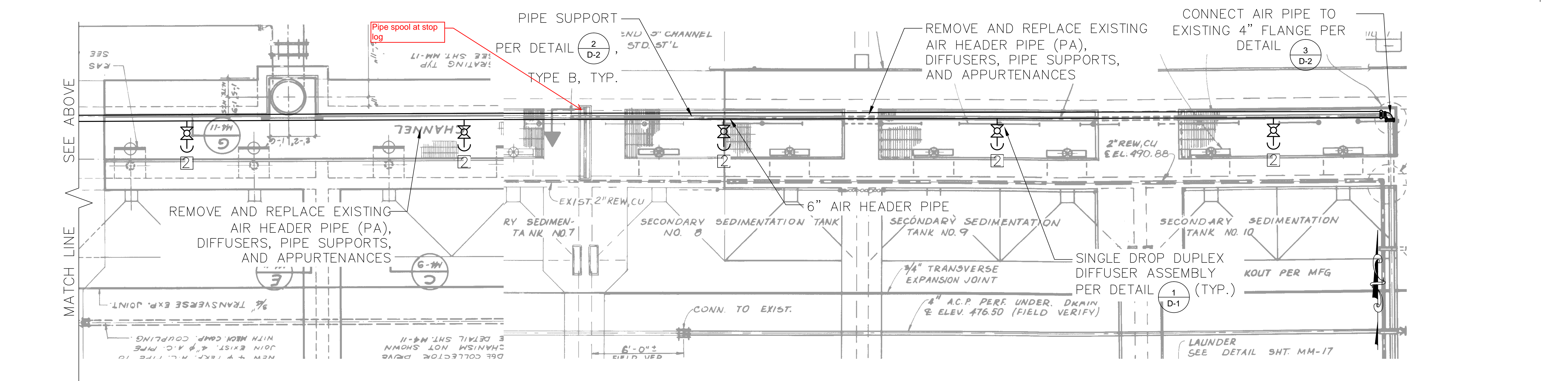
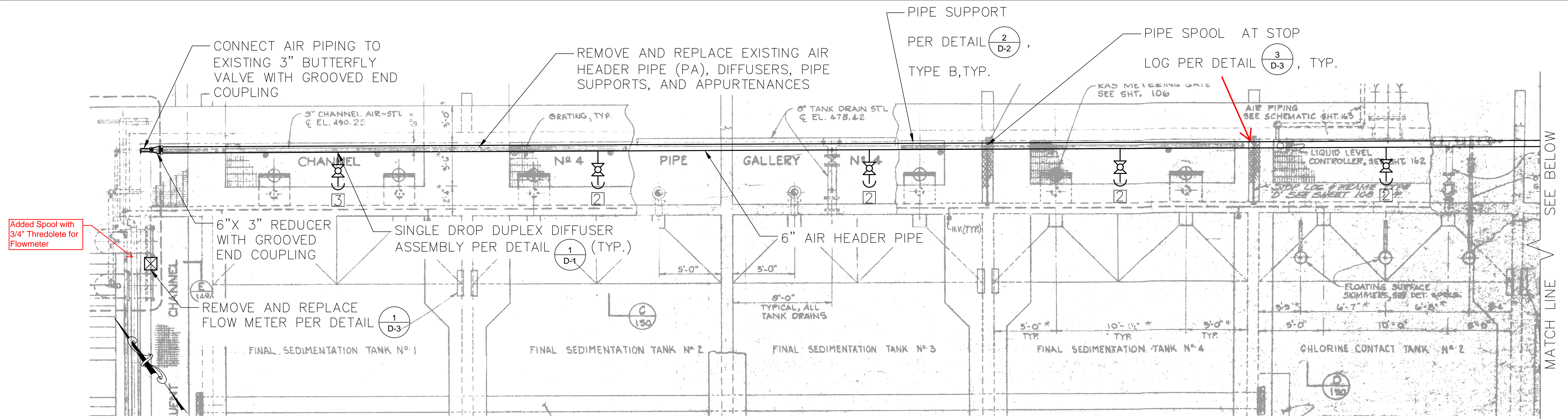
**LAS VIRGENES MWD – TRIUNFO SD JPA
 TAPIA WATER RECLAMATION FACILITY
 CHANNEL MIXING IMPROVEMENTS PROJECT
 ACTIVATED SLUDGE BASIN FEED
 CHANNEL PLAN**

PREPARED BY: **MNS ENGINEERS, INC.**
 4580 E. Thousand Oaks Blvd.
 Suite 101
 Westlake Village, CA 91362

SCALE: HORIZONTAL: AS SHOWN
 VERTICAL: AS SHOWN

DATE: **SEPTEMBER 2014**

SHEET **5** OF **10**



GENERAL NOTES

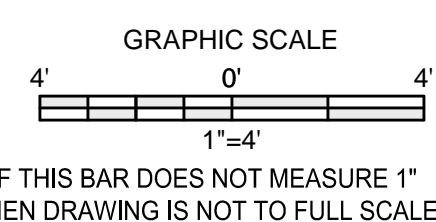
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4. CONTRACTOR TO PROTECT ALL EXISTING SURFACES, PIPES, VALVES, EQUIPMENT, BRACKETS, HARDWARE, AND OTHER ITEMS IN THE VICINITY OF WORK AREAS.

NOTES

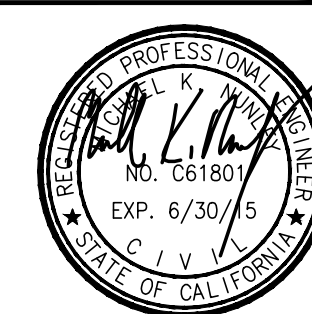
1. DROP LOCATIONS SHOWN ARE APPROXIMATE. LOCATIONS SHOULD BE CONFIRMED WITH THE DIFFUSER MANUFACTURER BASED ON REQUIRED AIR FLOW.
2. CONTRACTOR SHALL ALIGN DIFFUSER ASSEMBLIES TO AVOID CONFLICTS WITH STOP GATES.

LEGEND

- # - NUMBER OF DIFFUSERS ON DROP
- DIFFUSER DROP
- FLOW METER



DESIGN: MKN
 DRAWN: STU
 CHECKED: JA



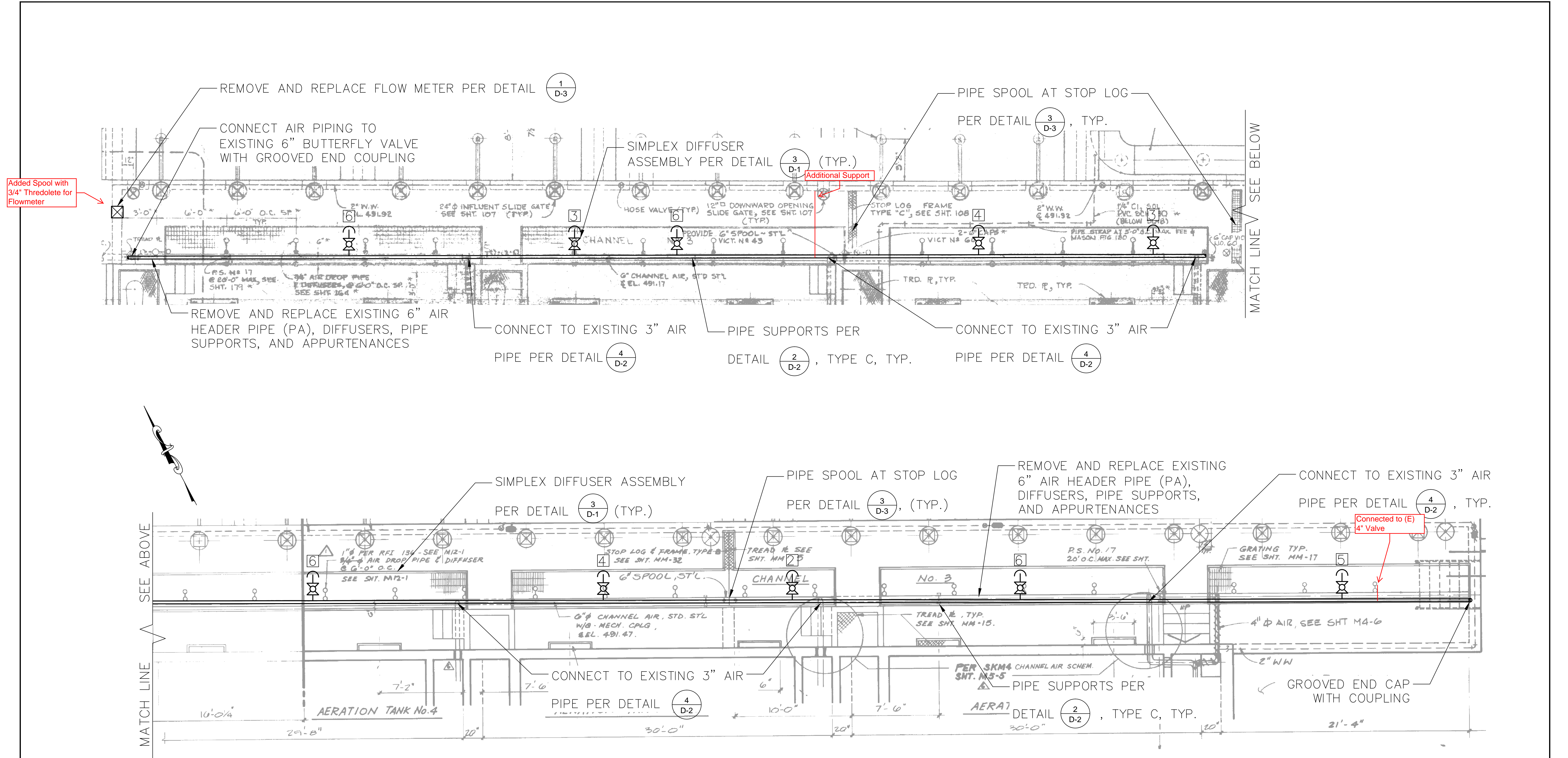
REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				

C-4

**LAS VIRGENES MWD – TRIUNFO SD JPA
 TAPIA WATER RECLAMATION FACILITY
 CHANNEL MIXING IMPROVEMENTS PROJECT
 RETURN ACTIVATED SLUDGE (RAS)
 CHANNEL PLAN**

PREPARED BY: MNS ENGINEERS, INC.
 4580 E. Thousand Oaks Blvd.
 Suite 101
 Westlake Village, CA 91362

SCALE: HORIZONTAL: AS SHOWN DATE: SEPTEMBER 2014 SHEET 6 OF 10
 VERTICAL: AS SHOWN



GENERAL NOTES

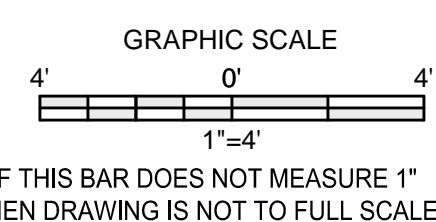
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NOTES

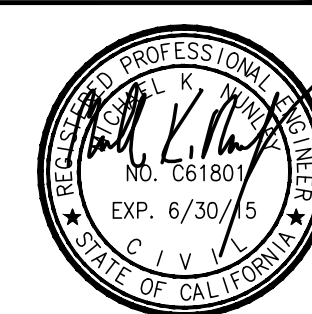
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2. UNLESS OTHERWISE INDICATED, SPACING BETWEEN DIFFUSERS SHALL BE 5 FEET.
3. CONTRACTOR SHALL ALIGN DIFFUSER ASSEMBLIES TO AVOID CONFLICTS WITH STOP GATES.

LEGEND

- # - NUMBER OF DIFFUSERS ON DROP
- ⊕ - DIFFUSER DROP
- ⊗ - FLOW METER



DESIGN: MKN
 DRAWN: STU
 CHECKED: JA



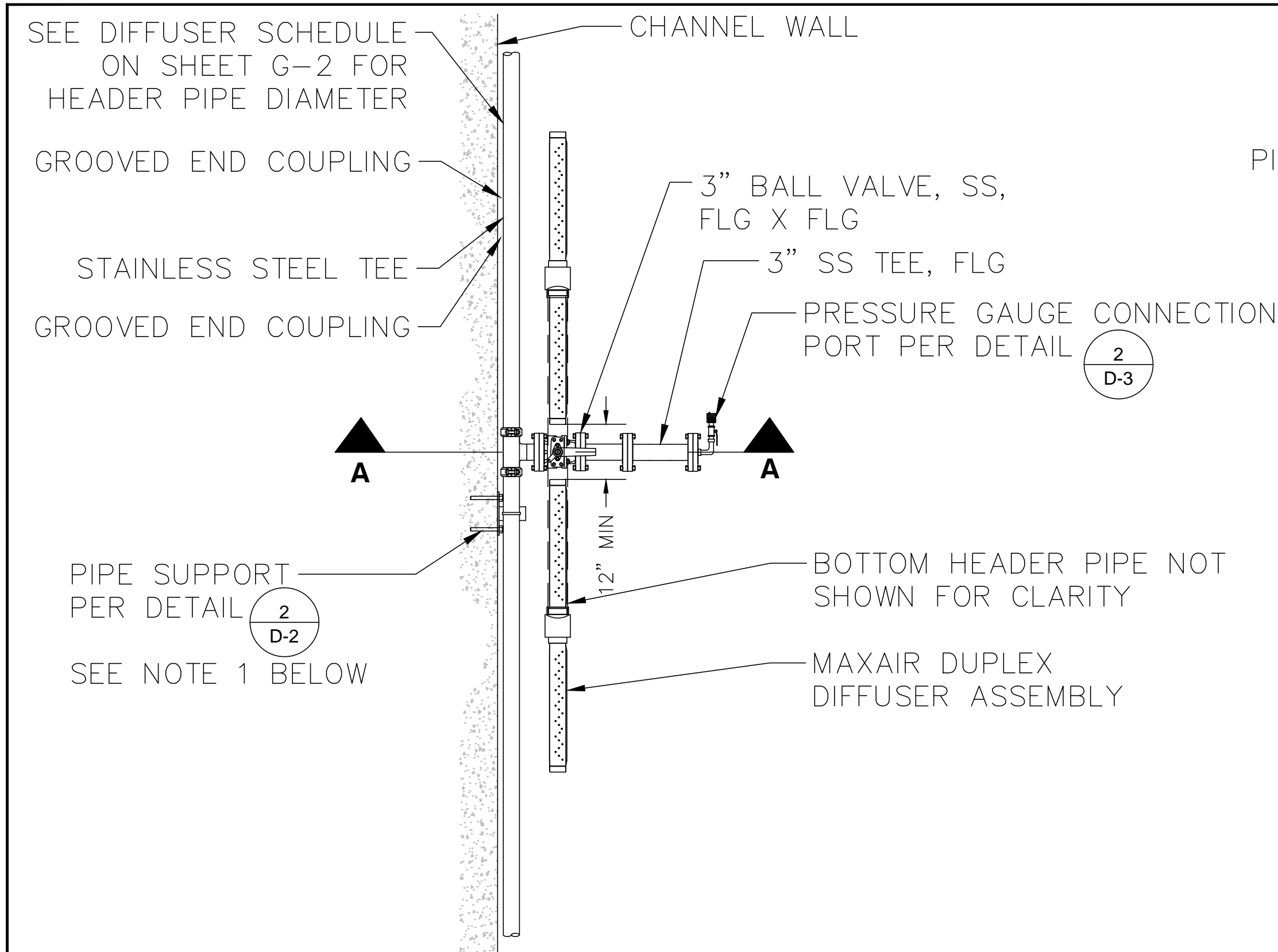
REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				

C-5

**LAS VIRGENES MWD – TRIUNFO SD JPA
 TAPIA WATER RECLAMATION FACILITY
 CHANNEL MIXING IMPROVEMENTS PROJECT
 MIXED LIQUOR SUSPENDED SOLIDS
 (MLSS) CHANNEL PLAN**

PREPARED BY:
 MNS ENGINEERS, INC.
 4580 E. Thousand Oaks Blvd.
 Suite 101
 Westlake Village, CA 91362

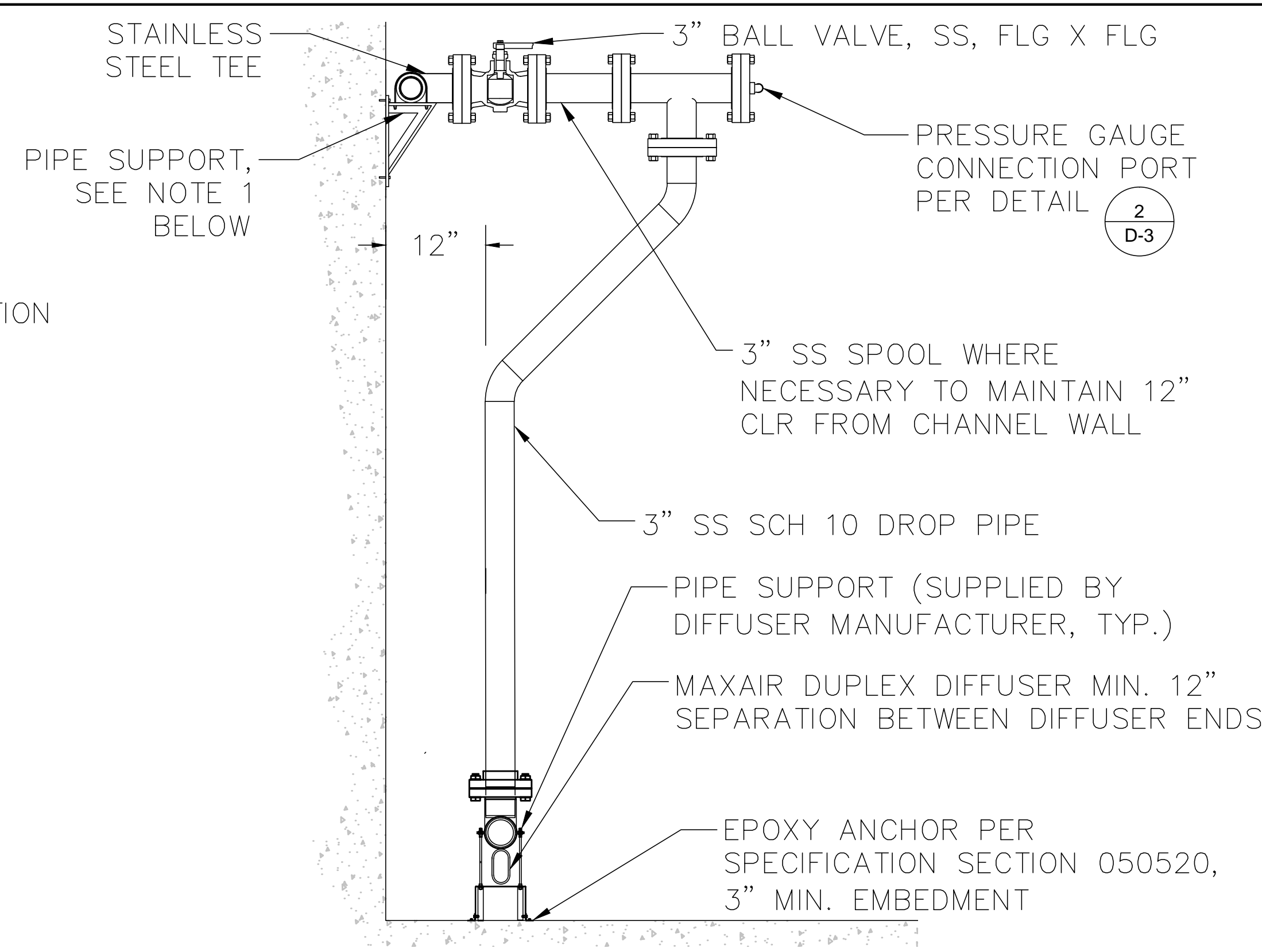
SCALE: HORIZONTAL: AS SHOWN DATE: SEPTEMBER 2014 SHEET 7 OF 10
 VERTICAL: AS SHOWN



1 PARALLEL DUPLEX DIFFUSER PLAN VIEW
NOT TO SCALE

NOTE

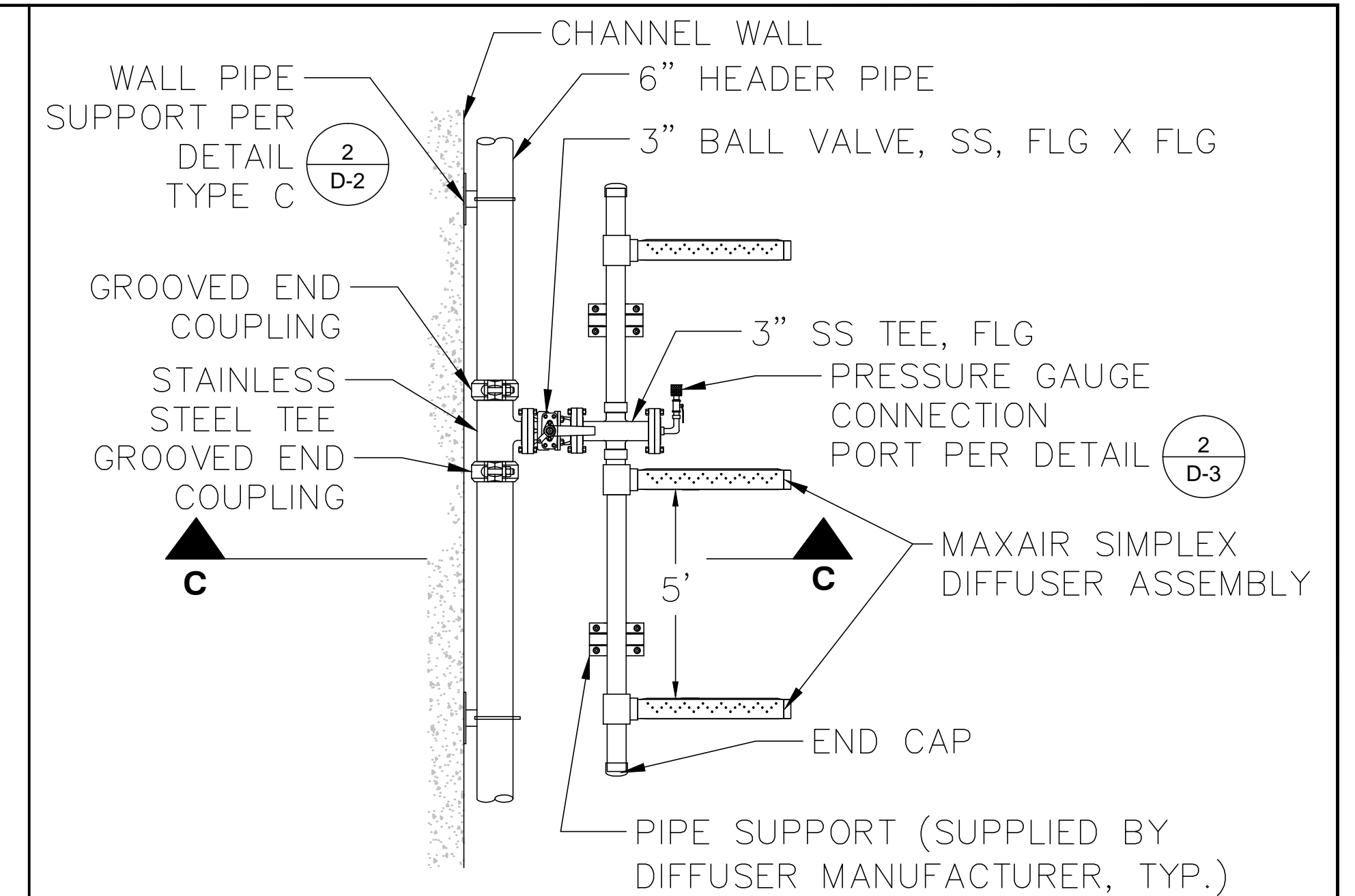
1 SEE DIFFUSER SCHEDULE, SHEET G-2, FOR PIPE SUPPORT TYPE. TYPE B SHOWN ABOVE IN PLAN VIEW AND SECTION.



SECTION A PARALLEL DUPLEX DIFFUSER
NOT TO SCALE

NOTE

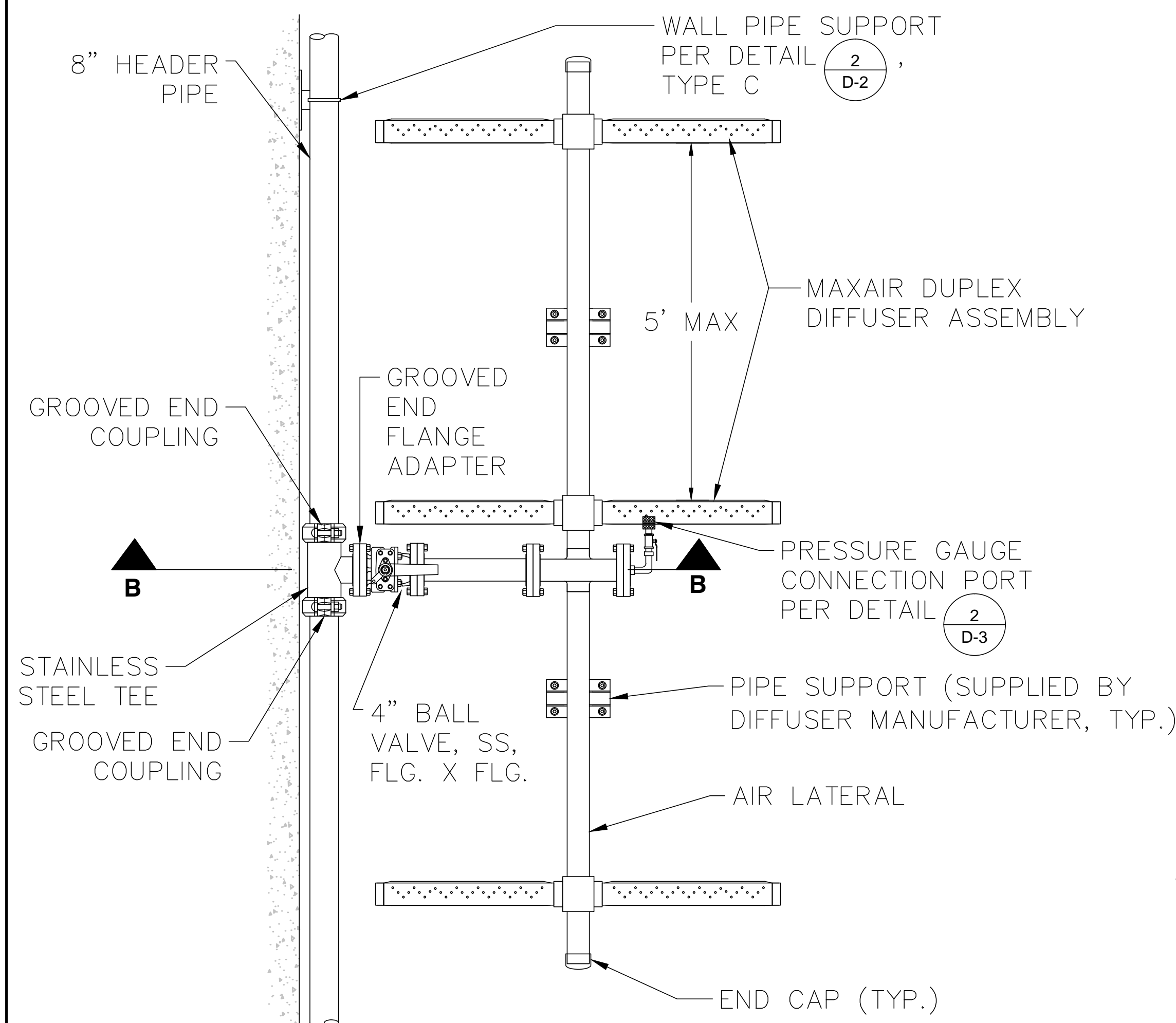
TEE AND BOTTOM HEADER PIPE ARE ONLY REQUIRED WHEN TWO DUPLEX ASSEMBLIES ARE INSTALLED ON ONE DROP. TEE AND BOTTOM HEADER PIPE WILL NOT BE INSTALLED ON DROP IF ONE DUPLEX DIFFUSER ASSEMBLY IS INSTALLED.



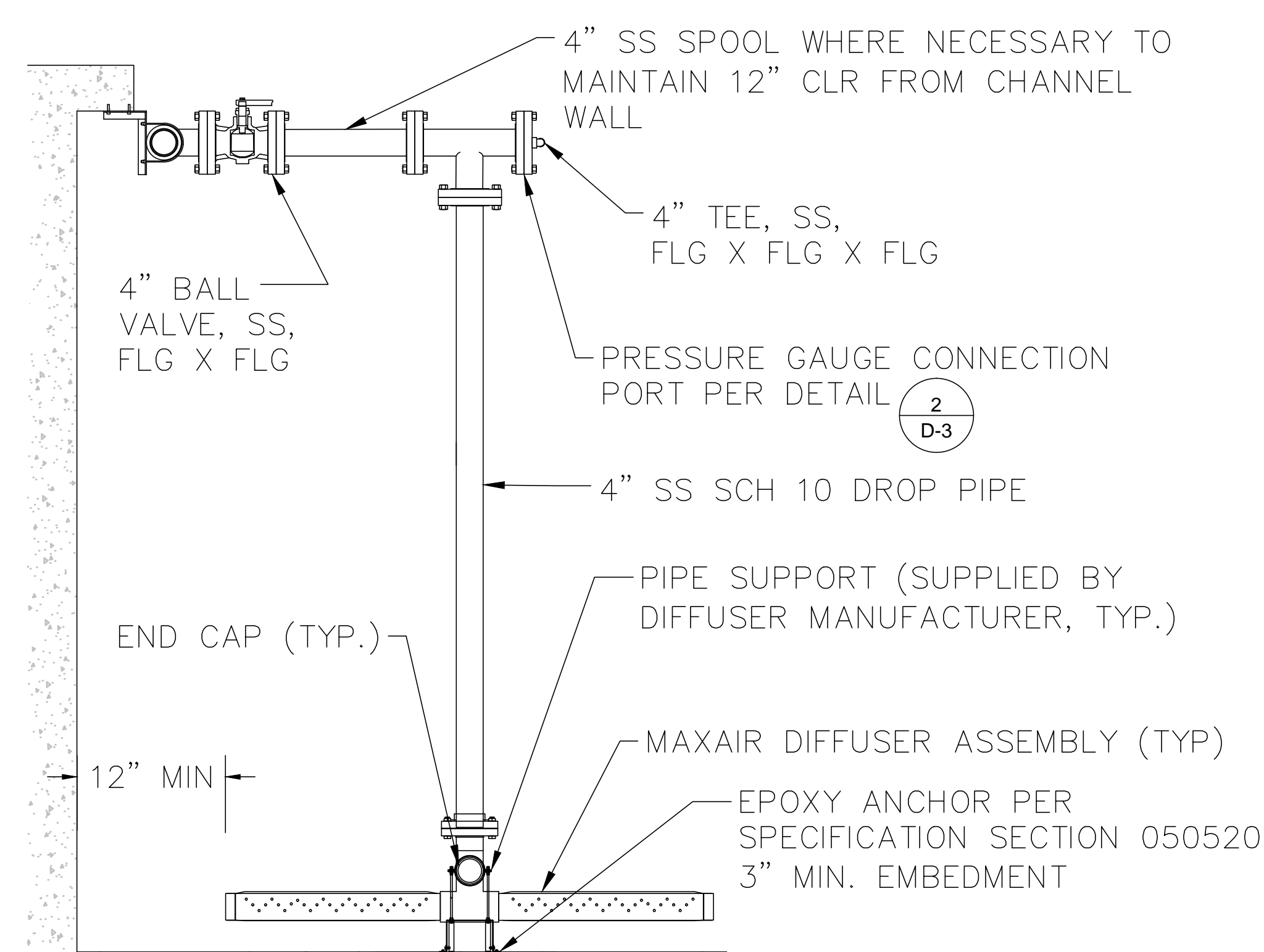
3 SIMPLEX DIFFUSER PLAN VIEW
NOT TO SCALE

NOTE

SEE CHANNEL PLAN FOR NUMBER OF DIFFUSERS PER DROP.



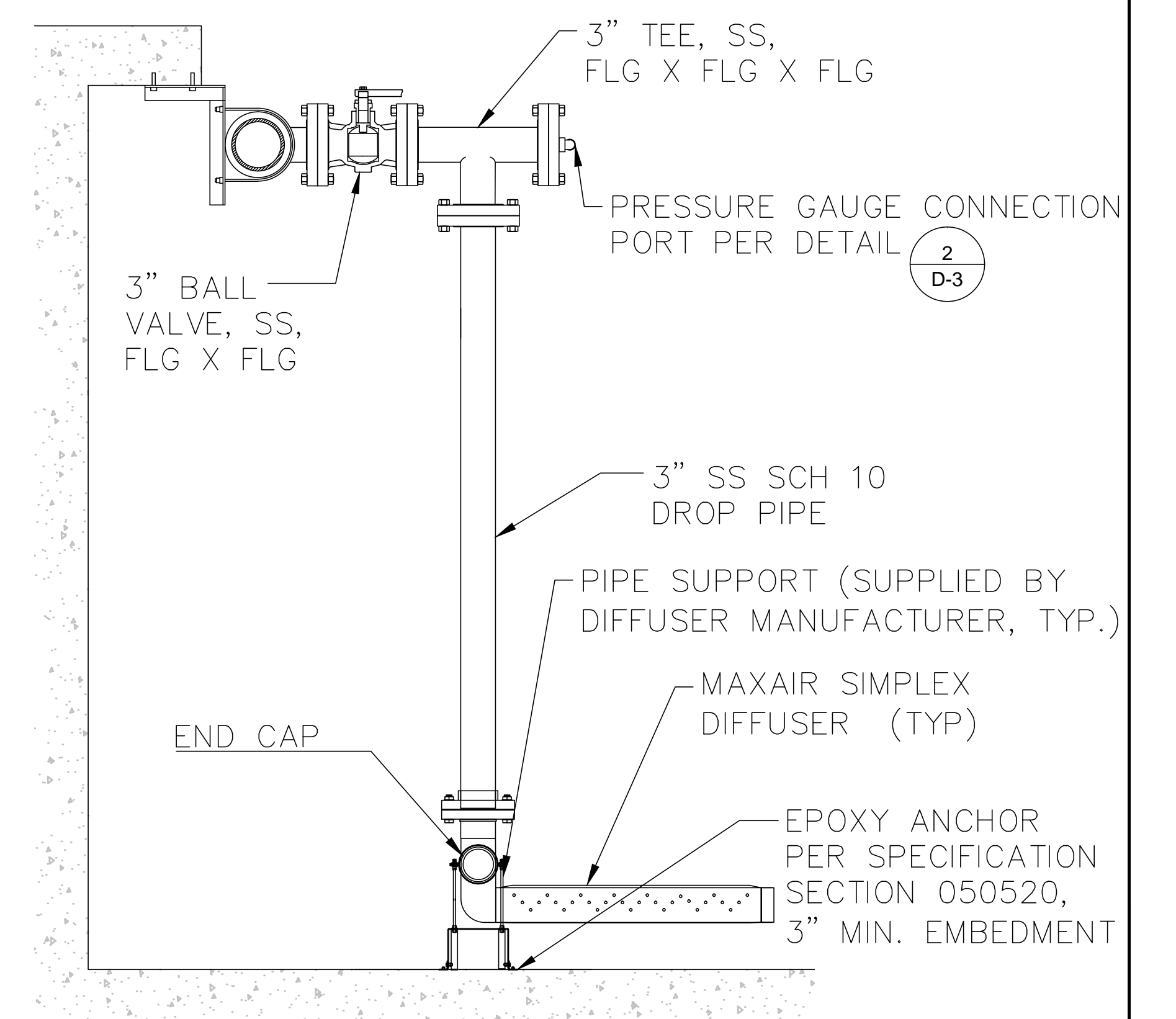
2 DUPLEX DIFFUSER PLAN VIEW
NOT TO SCALE



SECTION B DUPLEX DIFFUSER
NOT TO SCALE

NOTE

SEE CHANNEL PLAN FOR NUMBER OF DIFFUSERS PER DROP.



SECTION C EXPOSED SIMPLEX DIFFUSER
NOT TO SCALE

D-1

LAS VIRGENES MWD - TRIUNFO SD JPA
TAPIA WATER RECLAMATION FACILITY
CHANNEL MIXING IMPROVEMENTS PROJECT

DETAILS

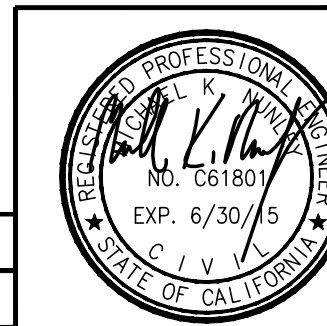
PREPARED BY:



MNS ENGINEERS, INC.
4580 E. Thousand Oaks Blvd.
Suite 101
Westlake Village, CA 91362

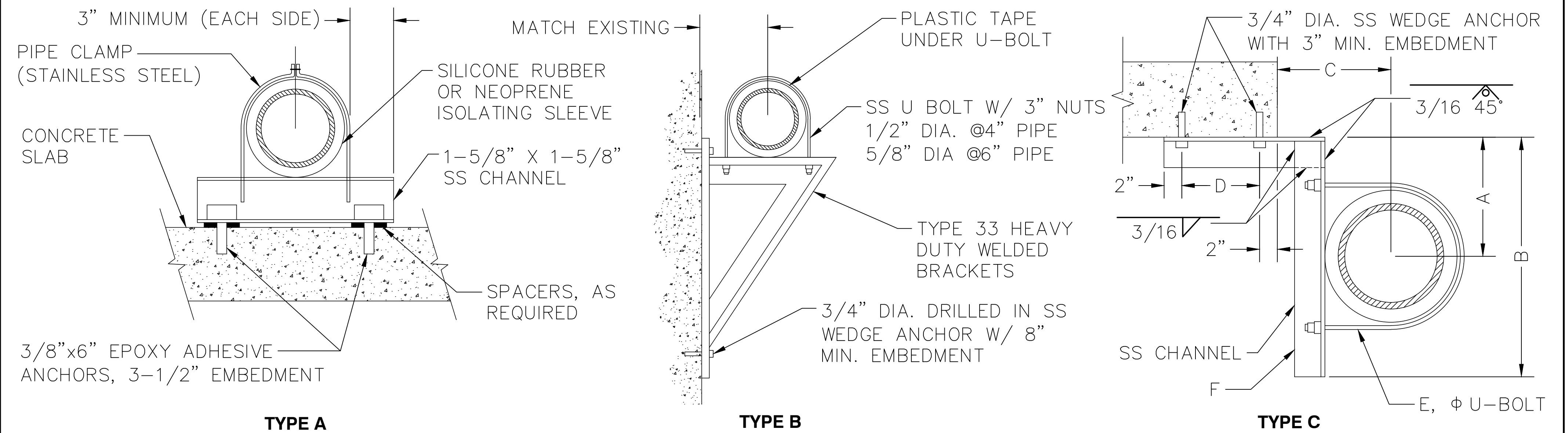
SCALE: HORIZONTAL: AS SHOWN VERTICAL: AS SHOWN DATE: SEPTEMBER 2014 SHEET 8 OF 10

DESIGN: MKN
DRAWN: STU
CHECKED: JA



REV. NO.	DATE	DESCRIPTION	APPVD.	DATE

REVISIONS



TYPE A NOTES

1. PROVIDE SPACERS AS REQUIRED

GENERAL NOTES

1. INSTALL PIPE SUPPORTS PER SPECIFICATION SECTION 400764
2. INSTALL EPOXY ADHESIVE ANCHORS PER MANUFACTURER RECOMMENDATION

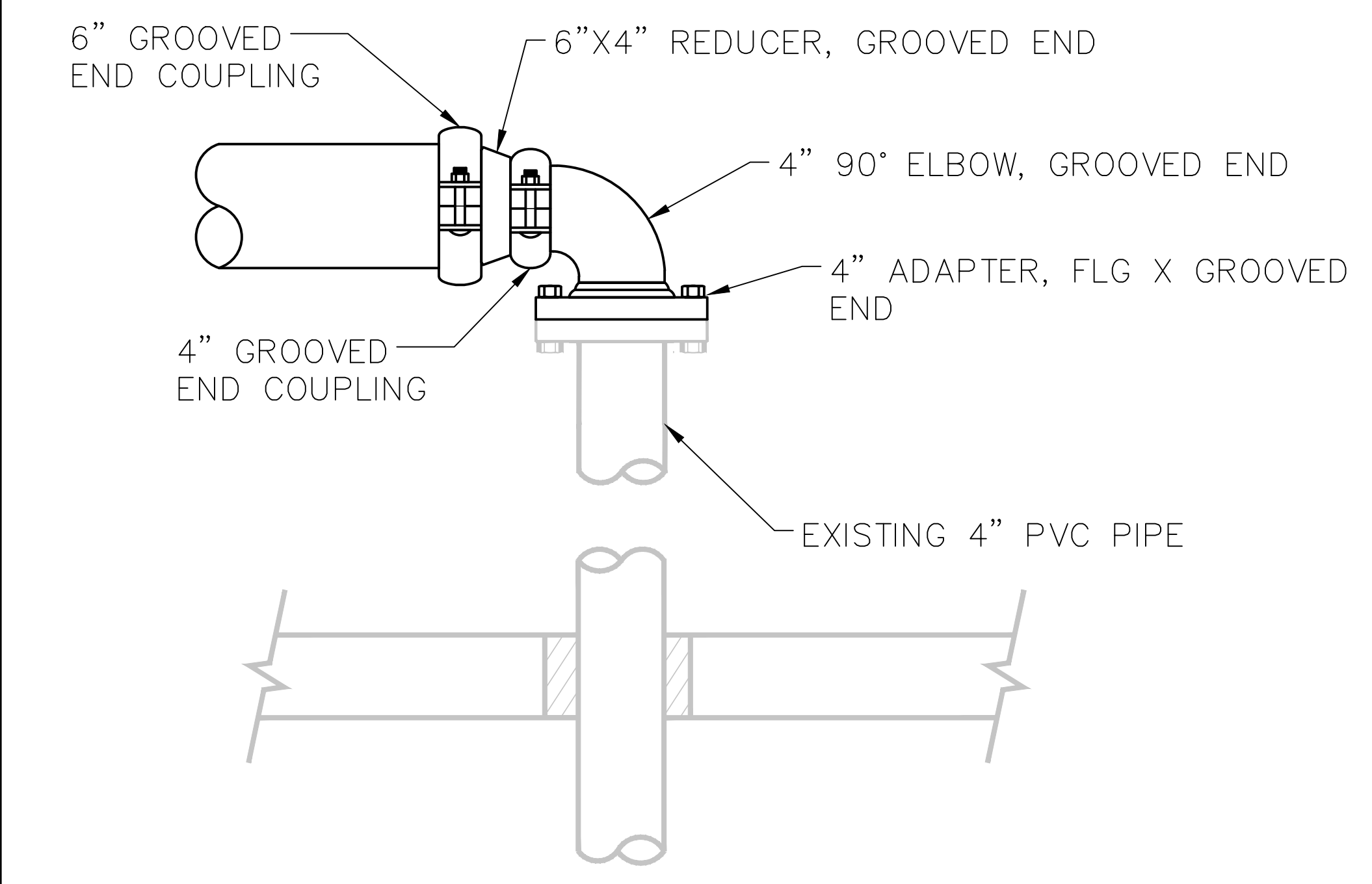
TYPE B NOTES

1. BRACKETS TO BE STAINLESS STEEL
2. FOR WALL MOUNT USE FLAT BAR AS SHOWN.

DIA.	A	B	C	D	E	F
2"	3"	6"	4"	4"	3/8"	< 1-1/2"X1-1/2"X1/4"
3"	6"	9"	6"	5"	3/8"	< 2"X2"X1/4"
4"	6"	10"	6"	6"	1/2"	< 2-1/2"X2-1/2"X1/4"
4"	4"	8"	6"	6"	1/2"	< 2-1/2"X2-1/2"X1/4"
6"	7"	12"	6"	6"	1/2"	< 2-1/2"X2-1/2"X1/4"
8"	6"	14"	6"	6"	5/8"	< 3"X3"X1/4"

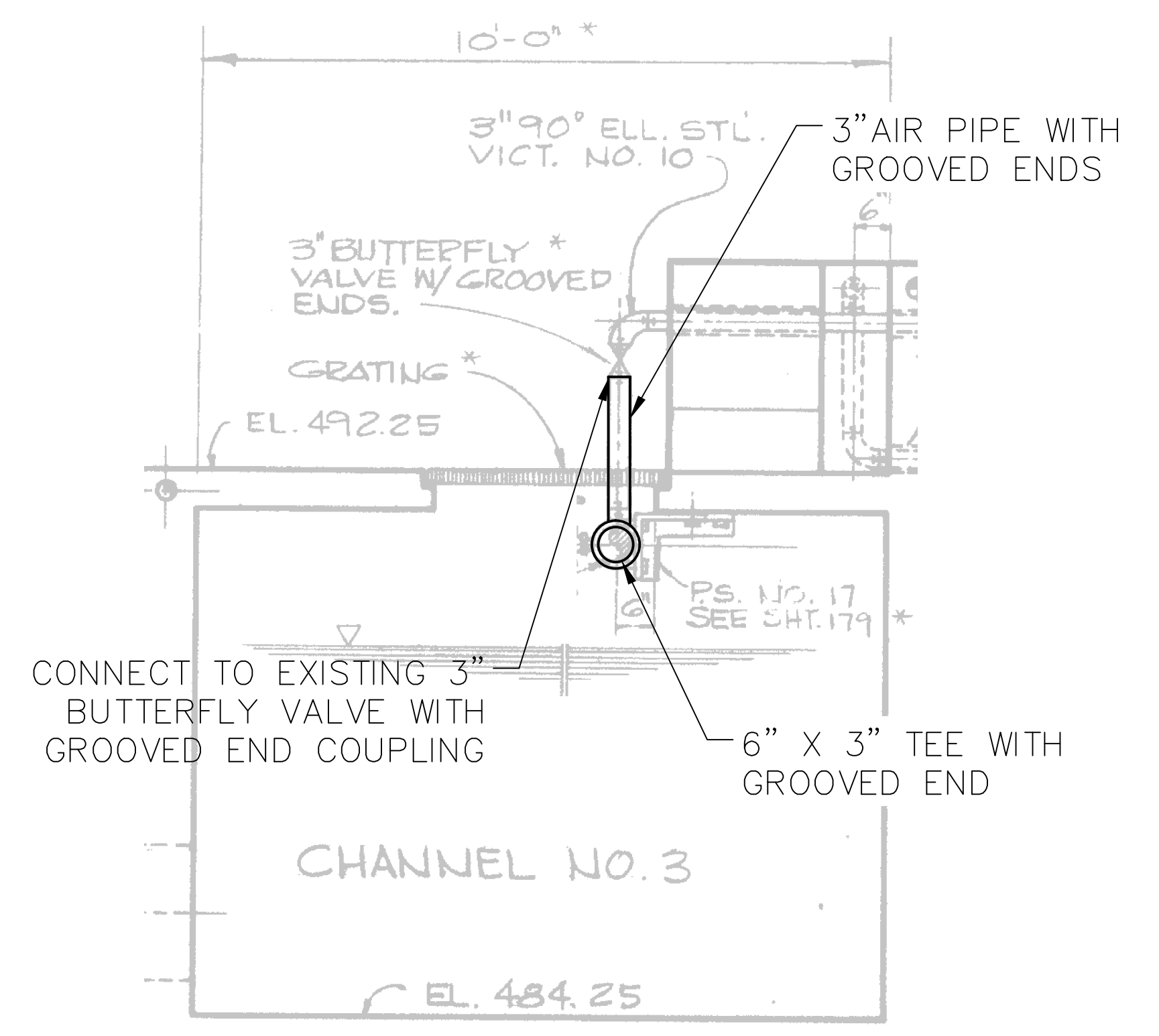
2 PIPE SUPPORT DETAIL

NOT TO SCALE



3 4" AIR CONNECTION AT RAS CHANNEL DETAIL

NOT TO SCALE



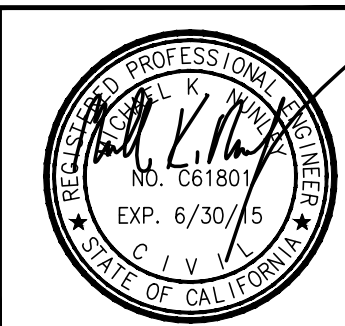
4 3" AIR CONNECTION AT MLSS CHANNEL DETAIL

NOT TO SCALE

D-2

1 NOT USED

DESIGN: MKN
DRAWN: STU
CHECKED: JA



REV. NO.	DATE	DESCRIPTION	APPVD.	DATE
REVISIONS				

LAS VIRGENES MWD – TRIUNFO SD JPA
TAPIA WATER RECLAMATION FACILITY
CHANNEL MIXING IMPROVEMENTS PROJECT

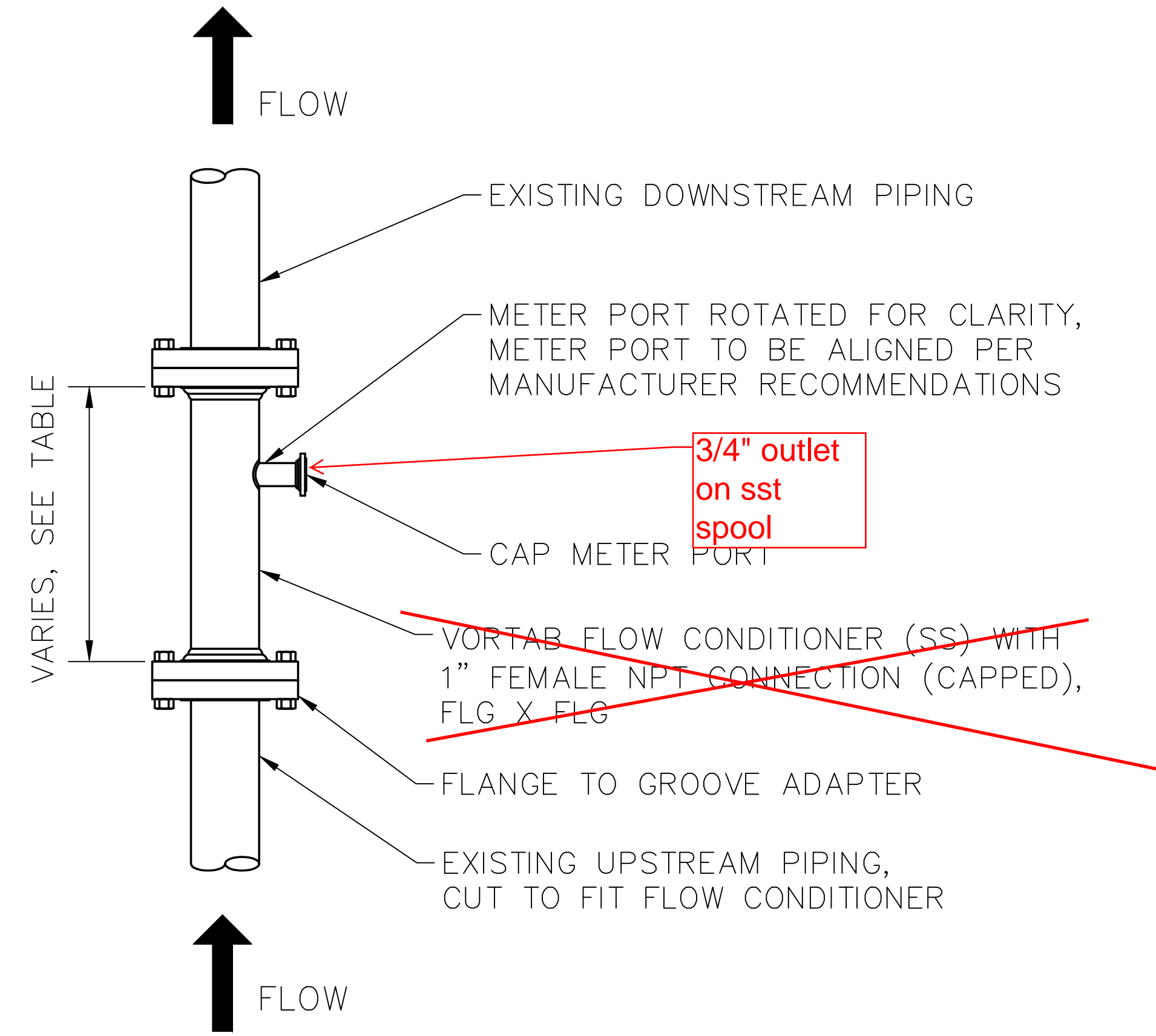
DETAILS

PREPARED BY:
MNS ENGINEERS, INC.
4580 E. Thousand Oaks Blvd.
Suite 101
Westlake Village, CA 91362

SCALE: HORIZONTAL: AS SHOWN
VERTICAL: AS SHOWN

DATE: SEPTEMBER 2014

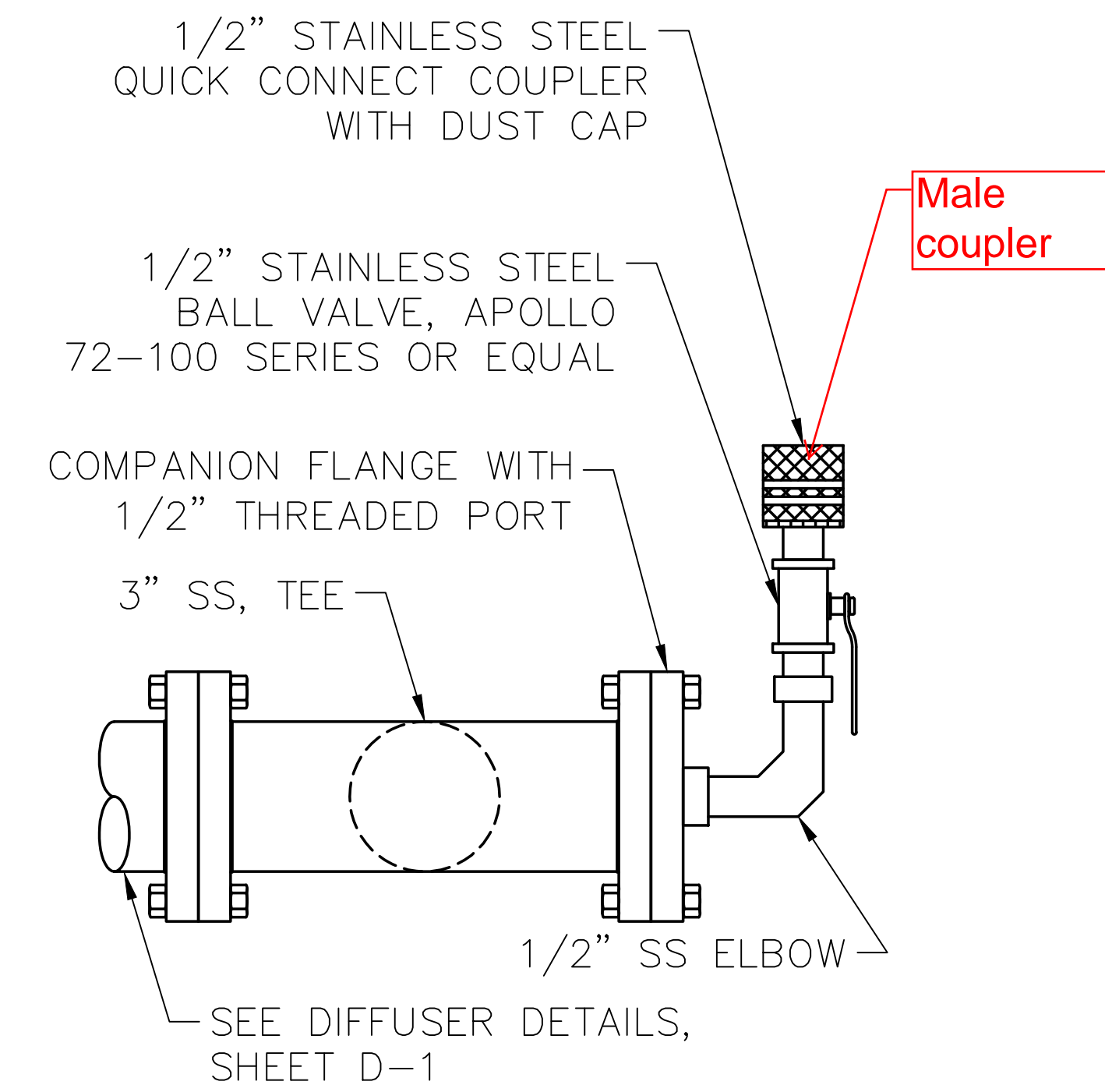
SHEET 9 OF 10



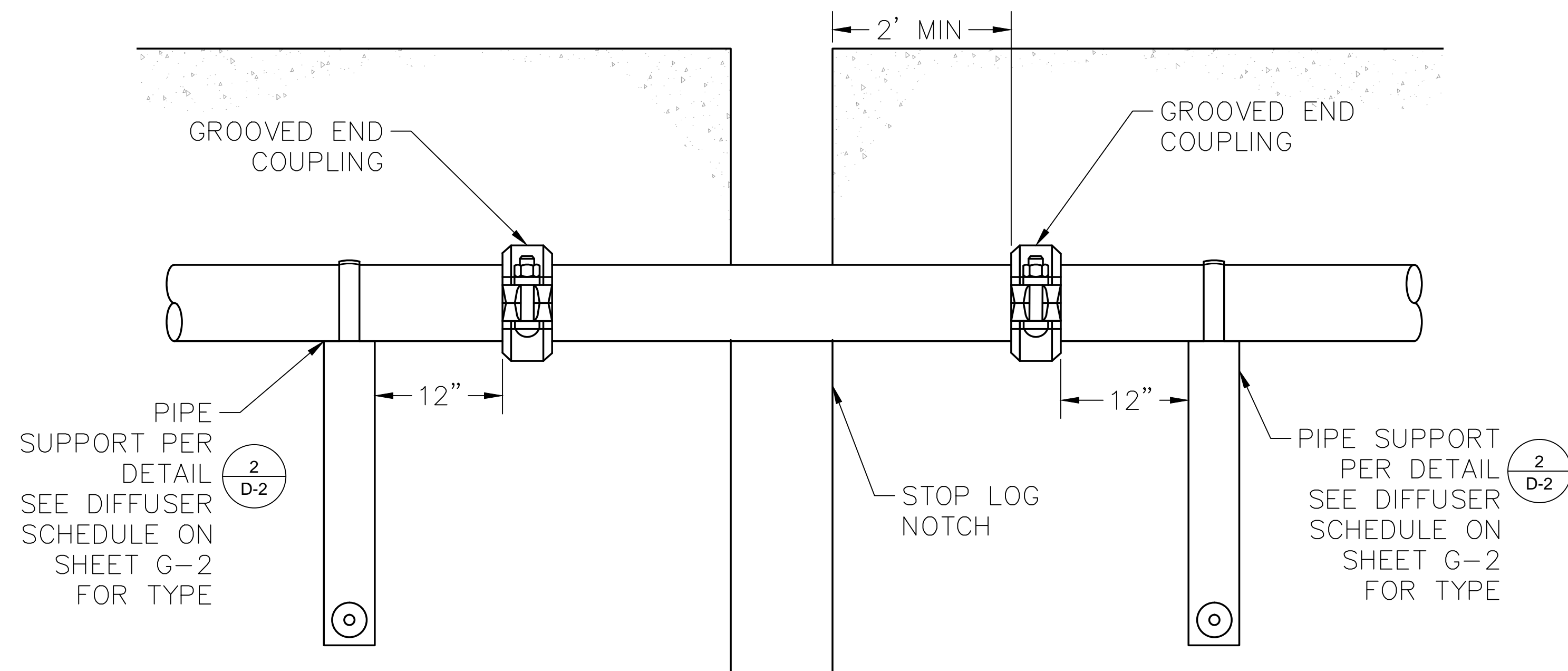
PIPE SIZE	VORTAB LENGTHS
3"	21"
4"	28"
6"	42"

* CONTRACTOR TO VERIFY DIMENSIONS WITH MANUFACTURER

1 FLOW CONDITIONER NOT TO SCALE



2 PRESSURE GAUGE CONNECTION PORT DETAIL - PLAN VIEW NOT TO SCALE



3 PIPE SPOOL AT STOP LOG LOCATION DETAIL NOT TO SCALE

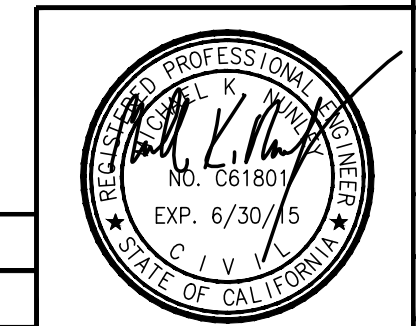
D-3

LAS VIRGENES MWD – TRIUNFO SD JPA
 TAPIA WATER RECLAMATION FACILITY
 CHANNEL MIXING IMPROVEMENTS PROJECT
 DETAILS

PREPARED BY:
 MNS ENGINEERS, INC.
 4580 E. Thousand Oaks Blvd.
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 Westlake Village, CA 91362

SCALE: HORIZONTAL: AS SHOWN DATE: SEPTEMBER 2014 SHEET 10 OF 10
 VERTICAL: AS SHOWN

DESIGN: MKN
 DRAWN: STU
 CHECKED: JA



REV. NO.	DATE	DESCRIPTION	APPVD.	DATE

REVISIONS