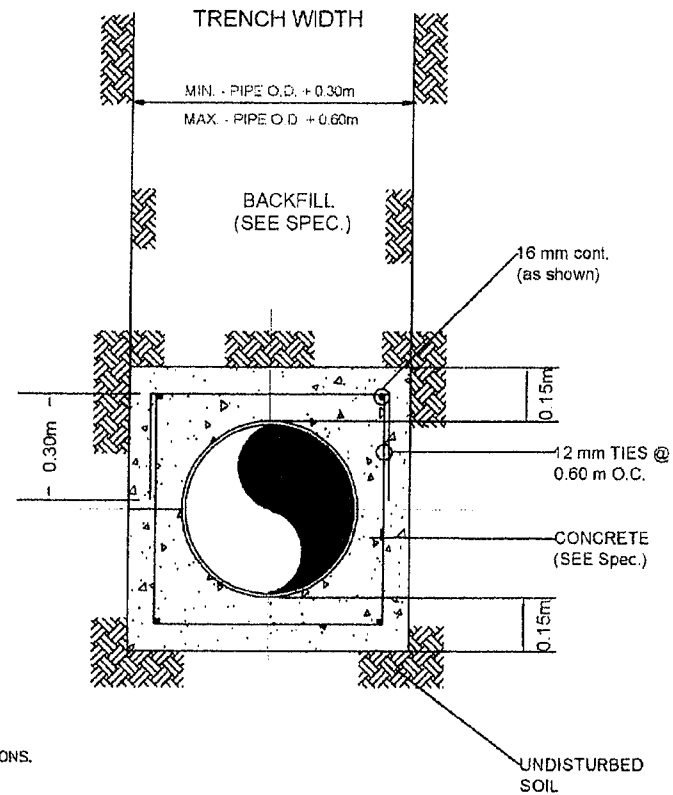


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- NOTES:
1. ALL SIZES AND LOCATION SUBJECT TO CHANGE TO SUIT FIELD CONDITIONS.
  2. THE DESIGNER SHALL NOT BE LIABLE FOR ANY ALTERATION/REVISION ON THE PLANS/DRAWINGS AND SPECIFICATIONS IMPROVED BY THE AUTHORIZED SUPERVISING ENGINEER DONE WITHOUT THEIR KNOWLEDGE THAT MAY IMPAIR STRENGTH OF THE PROJECT.

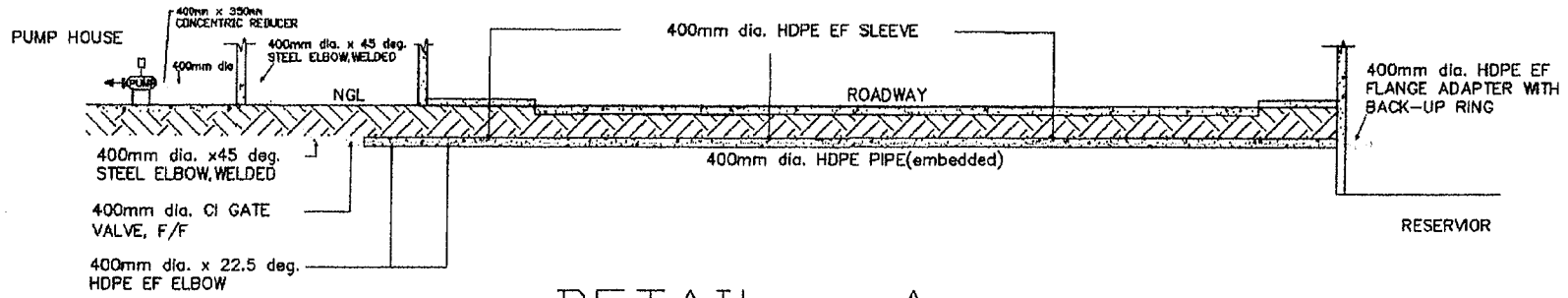
### CONCRETE ENCASUREMENT DETAIL

SCALE:

NTS

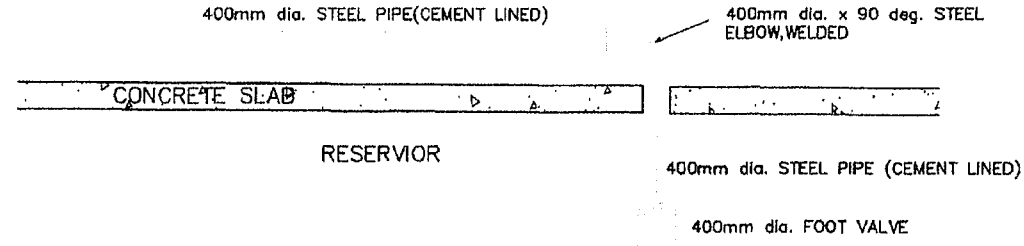
 <b>CALAMBA WATER DISTRICT</b> ENGINEERING DEPARTMENT PLANNING AND DESIGN DIVISION <small>347 Public Service</small>	PROJECT TITLE:	AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.	SHEET CONTENTS:
	REHABILITATION OF SUCTION PIPE (LINE)	DESIGNED BY: MR. FERNANDO H. ARELLANO JR.	AS INDICATED ABOVE
	LOCATION:	CHECKED BY: ENGR. RANELY S. CARTAGO	
	LAKEVIEW SUBD., HALANG, CALAMBA CITY	Recommended by: ENGR. RANELY S. CARTAGO	SHEET NO. SD-11
	Bucal Pumping Station, Calamba City	APPROVED BY: MR. EXEQUIEL AGUILAR JR.	

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## DETAIL A

SCALE: NTS




## DETAIL B

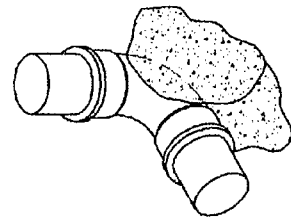
SCALE: NTS

- NOTES:
1. ALL SIZES AND LOCATION SUBJECT TO CHANGE TO SUIT FIELD CONDITIONS.
  2. THE DESIGNER SHALL NOT BE LIABLE FOR ANY ALTERATION/REVISION ON THE PLANS/DRAWINGS AND SPECIFICATIONS IMPROVED BY THE AUTHORIZED SUPERVISING ENGINEER DONE WITHOUT THEIR KNOWLEDGE THAT MAY IMPAIR STRENGTH OF THE PROJECT.
  3. EMBEDDED PIPE ACROSS THE ROADWAY WITH CONCRETE ENCASMENT

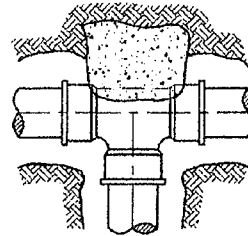
NEW HDPE PIPE  
EXISTING STEEL PIPE  
TO BE REPLACED

 <b>CALAMBA WATER DISTRICT</b> ENGINEERING DEPARTMENT PLANNING AND DESIGN DIVISION <small>207 Public Service</small> LAKEVIEW SUBD., HALANG, CALAMBA CITY	PROJECT TITLE:	AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.	SHEET CONTENTS:	DATE:
	REHABILITATION OF SUCTION PIPE (LINE)	DESIGNED BY: MR. FERNANDO H. ARELLANO JR.	AS INDICATED ABOVE	3-28-2020
	LOCATION:	CHECKED BY: ENGR. RANELY S. CARTAGO		SHEET NO.
	Bucal Pumping Station, Calamba City	RECOMMENDED BY: ENGR. RANELY S. CARTAGO		BPS-3
	APPROVED BY: MR. EXEQUIEL AGUILAR, JR.			

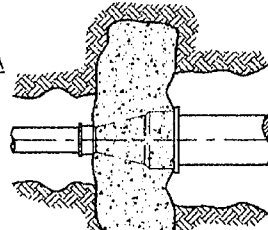
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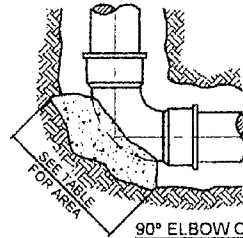
ISOMETRY OF THRUST BLOCK AREA



TEE

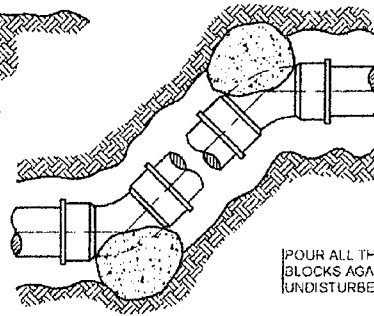


REDUCER



90° ELBOW OR BEND

SEE TABLE FOR AREA



POUR ALL THRUST BLOCKS AGAINST UNDISTURBED SOIL

OFFSETS AND BEND

TABLE OF MINIMUM THRUST BLOCK AREA IN SQ. M.				
PIPE SIZE (mm)	TEE & DEAD END	90° BEND	45° BEND	22½° BEND
75	0.05	0.07	0.04	0.02
100	0.09	0.12	0.07	0.04
150	0.20	0.28	0.15	0.09
200	0.35	0.50	0.27	0.14
250	0.55	0.77	0.42	0.21
300	0.79	1.11	0.60	0.31
350	1.07	1.52	0.82	0.42
400	1.4	1.88	1.07	0.55
450	1.77	2.51	1.36	0.69
500	2.19	3.1	1.68	0.85
600	3.15	4.46	2.42	1.23

NOTES:

1. ABOVE AREAS BASED ON AN ASSUMED SOIL BEARING PRESSURE OF 98 kPa (2000 psi)
2. REDUCE OR INCREASE AREAS PROPORTIONATELY TO SUIT ACTUAL FIELD CONDITIONS UPON APPROVAL OF ENGINEER
3. CONCRETE FOR THRUST BLOCK SHALL BE 13.8 MPa (2000 psi)
4. ALL CONCRETE SHALL BE POURED TO AVOID INTERFERENCE WITH JOINTS.
5. THRUST BLOCKS NOT REQUIRED ON STEEL PIPELINE WITH WELDED OR FLANGE JOINTS OR ON SOLVENT WELDED PVC PIPE
6. WHERE PIPE CONNECTS TO A FITTING IN A STEEL PIPELINE SHALL BE BLOCKED AS SHOWN HEREON
7. BEARING AREAS BASED ON INTERNAL PRESSURE OF 106m (150psi)

## HORIZONTAL CONCRETE THRUST BLOCK DETAILS

SCALE:

NTS



**CALAMBA WATER DISTRICT**  
ENGINEERING DEPARTMENT  
PLANNING AND DESIGN DIVISION

LAKEVIEW SUBD., HALANG, CALAMBA CITY

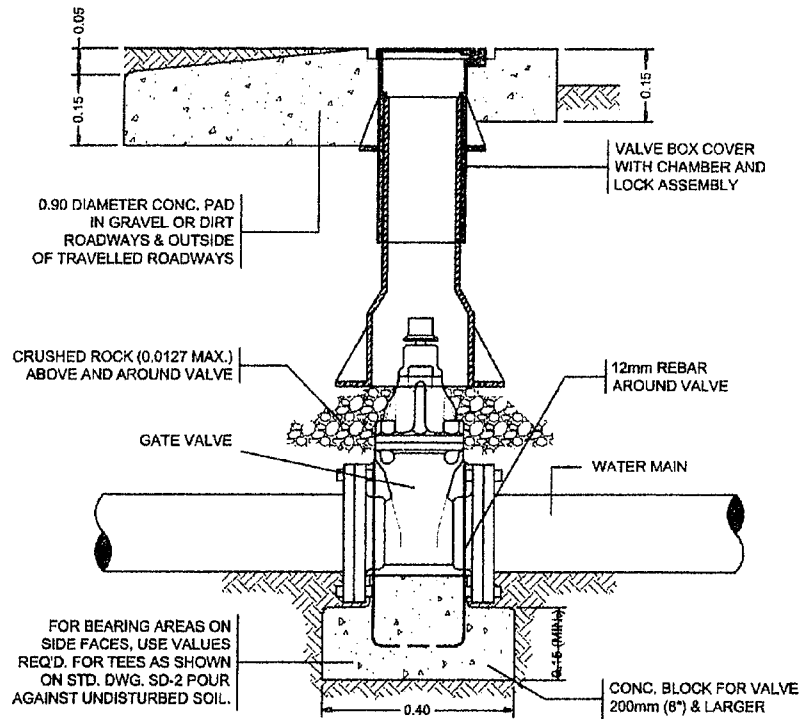
PROJECT TITLE:  
REHABILITATION OF SECTION PIPE (LINE)  
LOCATION:  
Bucal Pumping Station, Calamba City

AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.  
DESIGNED BY: MR. FERNANDO H. ARELLANO JR.  
CHECKED BY: ENGR. RANELY S. CARTAGO  
RECOMMENDED BY: ENGR. RANELY S. CARTAGO  
APPROVED BY: MR. EXEQUIEL AGUILAR JR.

SHEET CONTENTS:  
AS INDICATED ABOVE

DATE:  
3-28-2020  
SHEET NO.  
SD-2

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**NOTES:**

1. ALL DIMENSIONS IN METERS UNLESS OTHERWISE SHOWN. VALVES SHALL HAVE A MINIMUM COVER OF 0.30 m. MEASURED TO THE TOP OF THE OPERATING NUT.
2. VALVES SHALL BE INSTALLED ON EXTENSIONS OF PROPERTY LINES EXCEPT WHERE OTHERWISE SHOWN OR SPECIFIED.
3. USE FLANGED END GATE VALVES ON STEEL AND PVC PIPE LINE INSTALLATION.
4. CAST IRON OR STEEL COVER SHALL BE ADEQUATELY DESIGNED TO CARRY TRAFFIC LOADS.
5. CONCRETE BLOCK MAY BE OMITTED ON WELDED STEEL PIPE LINES AT OPTION OF CONTRACTOR.

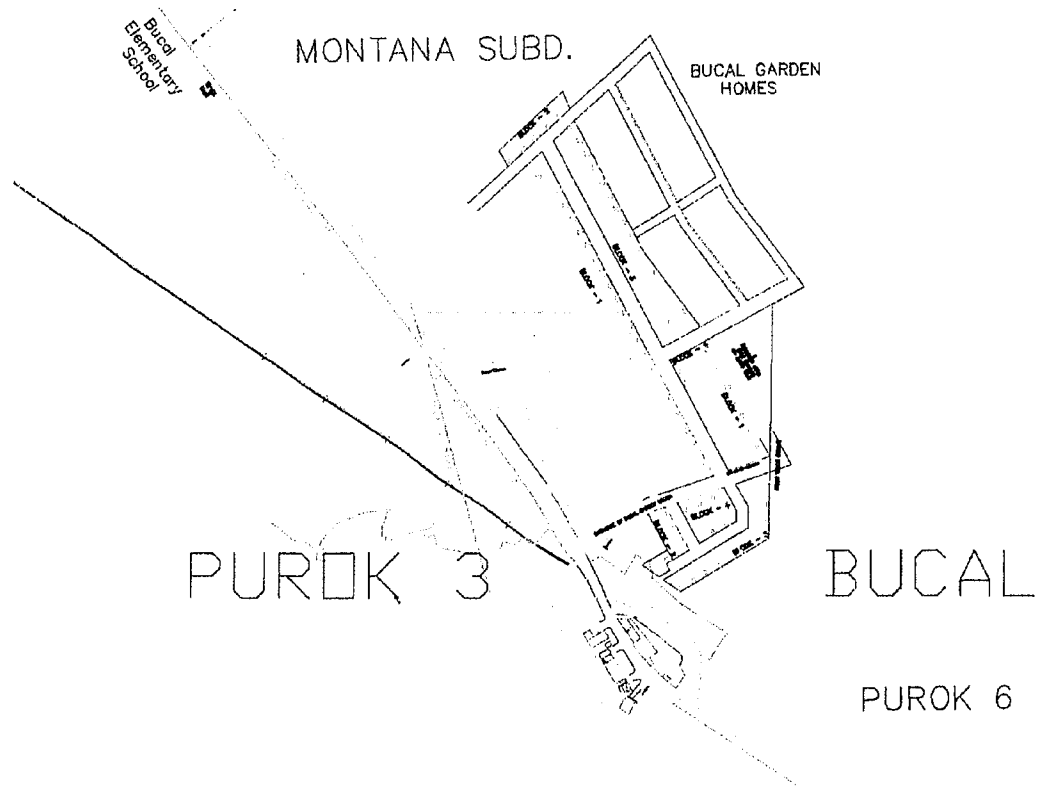
**INSTALLATION OF BURIED GATE VALVE**

SCALE:


NTS

 <p><b>CALAMBA WATER DISTRICT</b> ENGINEERING DEPARTMENT PLANNING AND DESIGN DIVISION</p> <p>LAKEVIEW SUBD., HALANG, CALAMBA CITY</p>	PROJECT TITLE:	AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.	SHEET CONTENTS:	DATE:
	REHABILITATION OF SUCTION PIPE (LINE)	DESIGNED BY: MR. FERNANDO H. ARELLANO JR.	AS INDICATED ABOVE	4-25-2020
	LOCATION:	CHECKED BY: ENGR. RANELY S. CARTAGO		SHEET NO.
	Bucal Pumping Station, Calamba City	RECOMMENDED BY: ENGR. RANELY S. CARTAGO		SD-4
		APPROVED BY: MR. EXEQUIEL AGUILAR JR.		

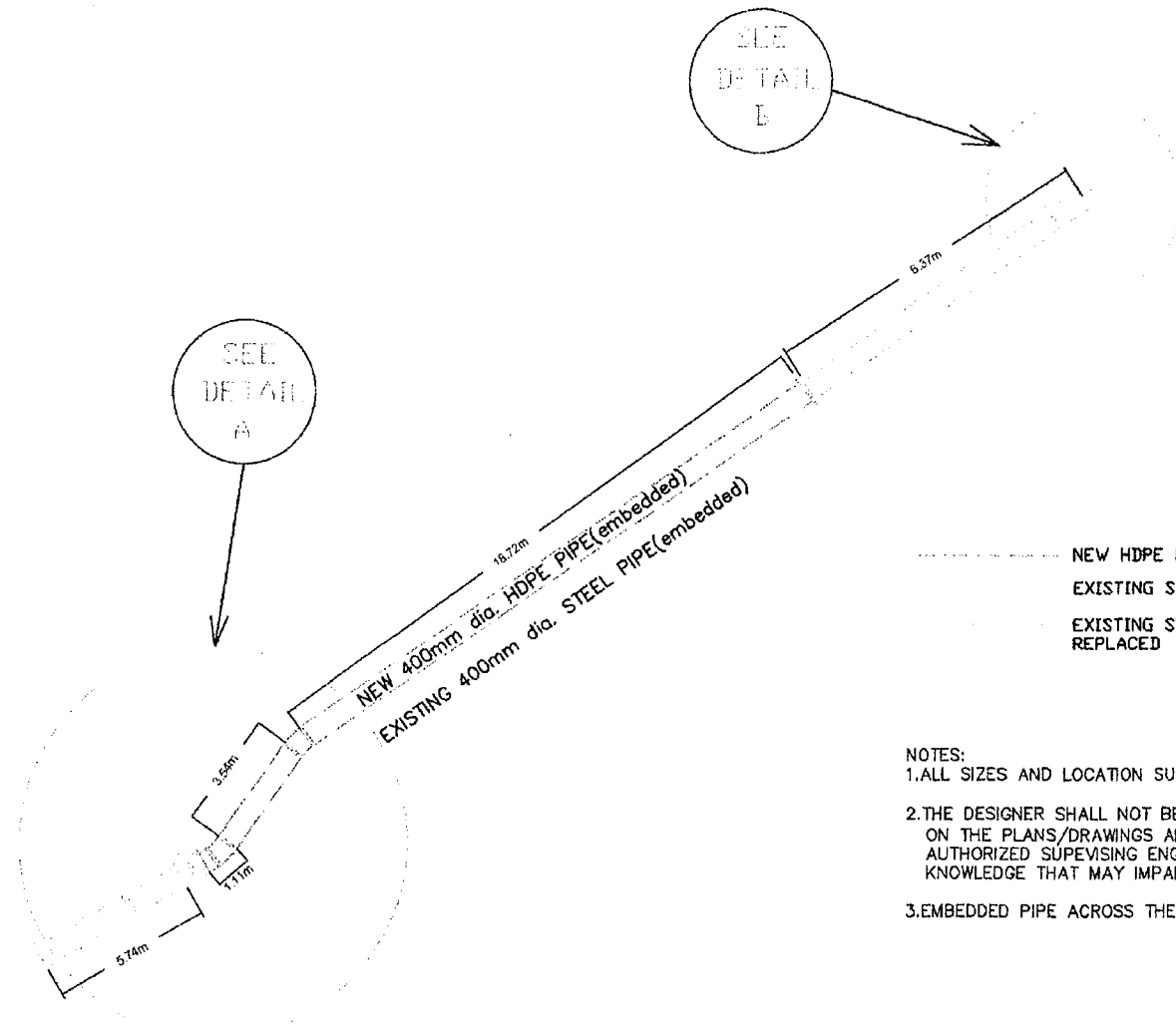
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**LOCATION PLAN**  
SCALE: NTS

 <b>CALAMBA WATER DISTRICT</b> ENGINEERING DEPARTMENT PLANNING AND DESIGN DIVISION <small>24/7 Public Service</small>	PROJECT TITLE:	AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.	SHEET CONTENTS:	DATE:
	REHABILITATION OF SUCTION PIPE (LINE)	DESIGNED BY: MR. FERNANDO H. ARELLANO JR.	AS INDICATED ABOVE	3-28-2020
	LOCATION:	CHECKED BY: ENGR. RANELY S. CARTAGO		SHEET NO.
	LAKEVIEW SUBD., HALANG, CALAMBA CITY	RECOMMENDED BY: ENGR. RANELY S. CARTAGO		BPS-1
	Bucal Pumping Station, Calamba City	APPROVED BY: MR. EXEQUIEL AGUILAR, JR.		

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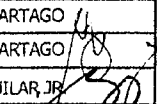


----- NEW HDPE PIPE  
 ----- EXISTING STEEL PIPE  
 ----- EXISTING STEEL PIPE TO BE REPLACED

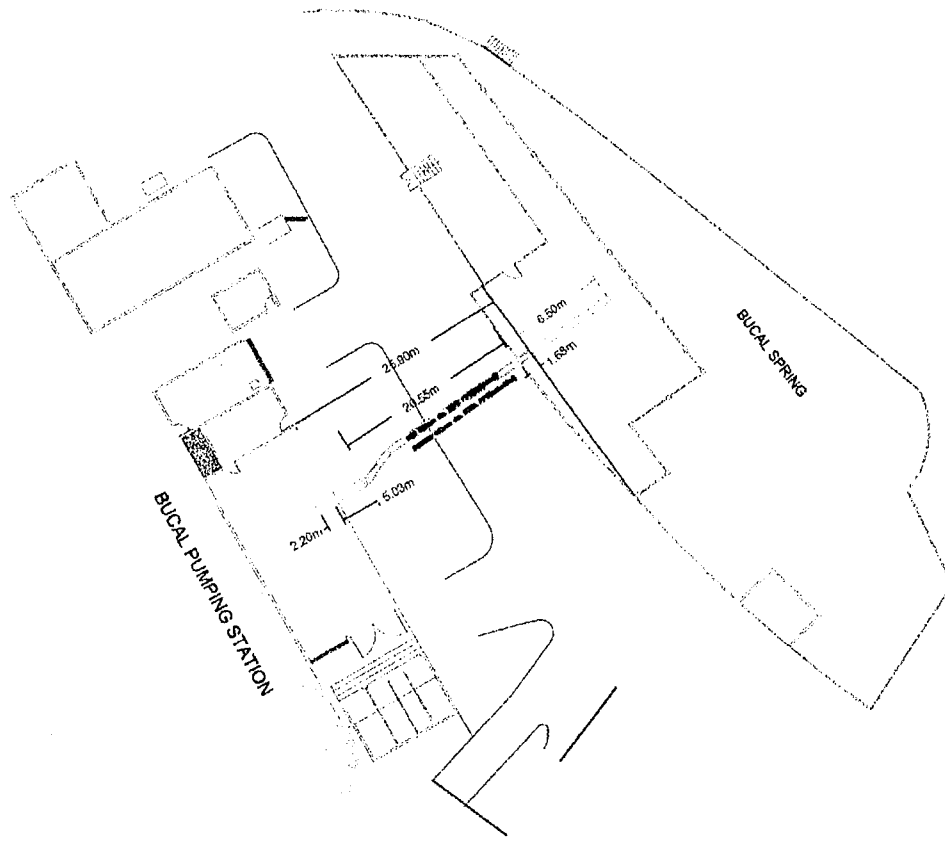
- NOTES:  
 1. ALL SIZES AND LOCATION SUBJECT TO CHANGE TO SUIT FIELD CONDITIONS.  
 2. THE DESIGNER SHALL NOT BE LIABLE FOR ANY ALTERATION/REVISION ON THE PLANS/DRAWINGS AND SPECIFICATIONS IMPROVED BY THE AUTHORIZED SUPERVISING ENGINEER DONE WITHOUT THEIR KNOWLEDGE THAT MAY IMPAIR STRENGTH OF THE PROJECT.  
 3. EMBEDDED PIPE ACROSS THE ROADWAY WITH CONCRETE ENCASEMENT

## PUMP SUCTION PIPE (LINE) PLAN

SCALE: NTS

 <b>CALAMBA WATER DISTRICT</b> ENGINEERING DEPARTMENT PLANNING AND DESIGN DIVISION <small>2017 Public Service</small>	PROJECT TITLE:	AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.	SHEET CONTENTS:	DATE:
	REHABILITATION OF SUCTION PIPE (LINE)	DESIGNED BY: MR. FERNANDO H. ARELLANO JR.	AS INDICATED ABOVE	5-13-2020
	LOCATION:	CHECKED BY: ENGR. RANELY S. CARTAGO		SHEET NO.
	Laqueal Pumping Station, Calamba City	RECOMMENDED BY: ENGR. RANELY S. CARTAGO		BPS-4
LAKEVIEW SUBD., HALANG, CALAMBA CITY	APPROVED BY: MR. EXEQUIEL AGUILAR JR.			

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### SITE DEVELOPMENT PLAN

SCALE: NTS

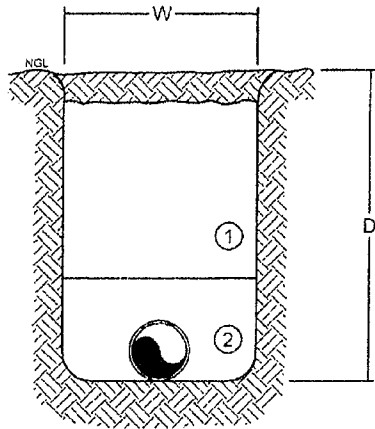
**NOTES:**

1. ALL SIZES AND LOCATION SUBJECT TO CHANGE TO SUIT FIELD CONDITIONS.
2. THE DESIGNER SHALL NOT BE LIABLE FOR ANY ALTERATION/REVISION ON THE PLANS/DRAWINGS AND SPECIFICATIONS IMPROVED BY THE AUTHORIZED SUPERVISING ENGINEER DONE WITHOUT THEIR KNOWLEDGE THAT MAY IMPAIR STRENGTH OF THE PROJECT.
3. EMBEDDED PIPE ACROSS THE ROADWAY WITH CONCRETE ENCASEMENT

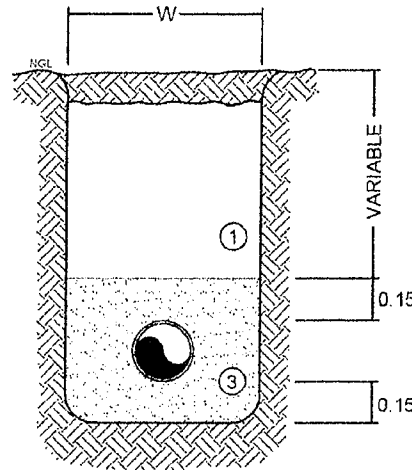
NEW HDPE PIPE  
 EXISTING STEEL PIPE  
 EXISTING STEEL PIPE TO BE REPLACED

	<b>CALAMBA WATER DISTRICT</b>	PROJECT TITLE:	AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.	SHEET CONTENTS:	DATE:
	ENGINEERING DEPARTMENT	REHABILITATION OF SUCTION PIPE (LINE)	DESIGNED BY: MR. FERNANDO H. ARELLANO JR.	AS INDICATED ABOVE	3-28-2020
	PLANNING AND DESIGN DIVISION	LOCATION:	CHECKED BY: ENGR. RANELY S. CARTAGO		SHEET NO.
	LAKEVIEW SUBD., HALANG, CALAMBA CITY	Boal Pumping Station, Calamba City	RECOMMENDED BY: ENGR. RANELY S. CARTAGO		BPS-2
			APPROVED BY: MR. EXEQUIEL AGUILAR JR.		

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NORMAL INSTALLATION  
WHERE SAND BEDDING  
BACKFILL NOT REQUIRED



IN ROCK OR WHEN  
ORDERED BY ENGINEER


TABLE OF TRENCH DIMENSIONS (IN METERS)			
Pipe Diameter (mm)	Minimum Width (W)	Maximum Width (W)	Depth (D)
50mmφ	0.20	0.30	0.60
75mmφ	0.20	0.30	0.90
100mmφ	0.40	0.70	0.95
150mmφ	0.45	0.75	1.00
200mmφ	0.50	0.80	1.05
250mmφ	0.55	0.85	1.10
300mmφ	0.60	0.90	1.15
350mmφ	0.65	0.95	1.20
400mmφ	0.70	1.00	1.25
450mmφ	0.75	1.05	1.30
500mmφ	0.80	1.10	1.35
600mmφ	0.90	1.20	1.45

LEGEND:  
 1. COMPACTED SELECTED NATIVE MATERIAL BACKFILL (SEE SPEC.)  
 2. COMPACTED SELECTED NATIVE MATERIAL IN 0.15 LAYERS (SEE SPEC.)  
 3. APPROVED SAND BEDDING & BACKFILL HAND PLACED AND COMPACTED.  
 4. PAYMENT FOR ANY RESURFACING WILL BE BASED ON MAXIMUM TRENCH WIDTHS PER SIZE PIPE SHOWN.

NOTE:  
 ALL DIMENSIONS IN METERS EXCEPT WHERE OTHERWISE SHOWN.

### TYPICAL TRENCH DETAILS

SCALE: NTS

 <b>CALAMBA WATER DISTRICT</b> ENGINEERING DEPARTMENT PLANNING AND DESIGN DIVISION <small>202 Public Service</small>	PROJECT TITLE:	AUTOCAD BY: MR. FERNANDO H. ARELLANO JR.	SHEET CONTENTS:	DATE:
	REHABILITATION OF SUCTION PIPE (LINE)	DESIGNED BY: MR. FERNANDO H. ARELLANO JR.	AS INDICATED ABOVE	4-25-2020
	LOCATION:	CHECKED BY: ENGR. RANELY S. CARTAGO		SHEET NO.
	Bucal Pumping Station, Calamba City	RECOMMENDED BY: ENGR. RANELY S. CARTAGO		SD-1
		APPROVED BY: MR. EXEQUIEL AGUILAR JR.		