

PROJECT INFO			PACKAGE/STARTUP	
Job Name:	Hyperion - Self-Priming Skid		Offering:	Complete System
Company:			Mechanical:	Skid by Romtec Utilities
Contact:			Pumps:	By Romtec Utilities
Job Type:	New Station		Control Panel:	By Romtec Utilities
Water Type/Source:	Reclaimed Water		Generator:	N/A
Import/Domestic:	Import Acceptable		Advisor/Startup:	Mechanical & Electrical
			Turnkey:	No

1. Pumping Rate: 700 gpm (per spec)
2. Total Dynamic Head (TDH): 22 ft (per spec)
3. Pump Configuration: Duplex
4. Pump Cycles: 6 min each cycle/10 starts per hour
5. Pipe Material: Ductile Iron
6. Pipe and Valve Size: 8 in
7. Finish Grade Elevation: 46 ft
8. Discharge Centerline Elevation: 50.68 ft
9. On-site Power: 480V/3-phase

Job Name: Hyperion Pilot MBR, East and West IPS Pump Skids
 Location: Playa Del Rey, CA
 Prepared By: Kevin Bogan, Mech. PE (OR)
 Date: 2/3/2021

Code Reference: ASCE 7-16
 Risk Category: III
 Site Class: C Provided in 12/11/20 comments from Stantec Engineering.

S_{DS} : 1.503 Provided in 12/11/20 comments from Stantec Engineering. Verified per attached report.

I_p : 1.5 Component Importance Factor. $I_p = 1.5$ for conveyance of hazardous material. Section 13.1.3
 a_p : 2.5 Table 13.6-1. ASME B31 piping with high deformability materials.
 R_p : 6 Table 13.6-1. ASME B31 piping with high deformability materials.
 z : 120 Connection elevation. (inch)
 h : 49.4 Average height of component/structure. (inch)

W_p : 7125 lbm

ANCHOR SHEAR DUE TO LATERAL SEISMIC FORCES ASCE 7-16, Section 13.3 Seismic Demands on Nonstructural Components

$$F_p = \frac{0.4a_p S_{DS} W_p}{\left(\frac{R_p}{I_p} \right)} \left(1 + 2 \frac{z}{h} \right) \quad (13.3-1)$$

F_p is not required to be taken as greater than

$$F_p = 1.6 S_{DS} I_p W_p \quad (13.3-2)$$

and F_p shall not be taken as less than

$$F_p = 0.3 S_{DS} I_p W_p \quad (13.3-3)$$

z/h : 1.00 Should not be more than 1.

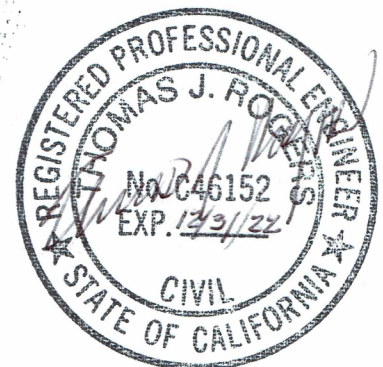
F_{Pcalc}	8032	lbf	Result from Formula (13.3-1)
F_{Pmax}	25701	lbf	Result from Formula (13.3-2)
F_{Pmin}	4819	lbf	Result from Formula (13.3-3)

Is greater than max? FALSE
 Is less than min? FALSE

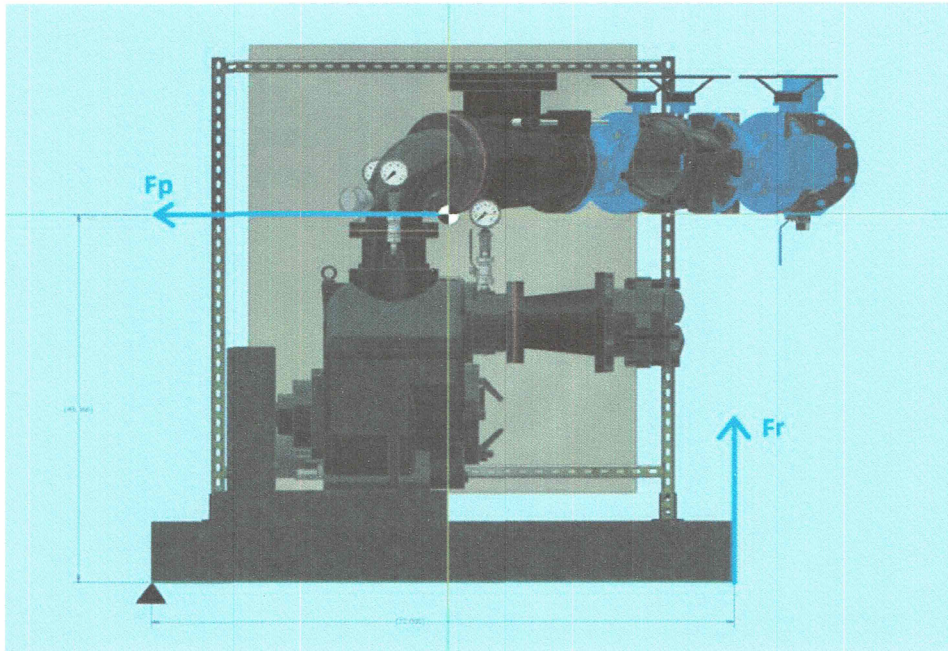
Use F_p = 8032 lbf

SF	2
# of Anchors	8

F_{shear} per Anchor 2008.0 lbf



RESULTANT ANCHOR TENSION DUE TO LATERAL SEISMIC FORCES



CG Height: 49.4 in. Derived within Autocad Inventor
 Moment due to FP: 396780.8 in-lbf
 Skid Width: 74 in
 F_r due to Moment: 5361.9 lbf

SF: 2
 # of Anchors (one side): 4
 F_{tension} per anchor: 2681.0 lbf

ANCHOR SELECTION

Concrete: 4000 psi minimum. Assumed to be cracked for seismic calculation purposes.
 Anchor Description: Hilti Kwik Bolt TZ, 304 or 316SS. 3/4" dia x 8" Length.
 5-3/4" hole depth, 5-9/16" embedment.

CONCRETE / PULLOUT FAILURE

Static Strength, Tension	4800	lbf, Hilti Table 16
Seismic Reduction Factor	0.75	
Seismic Strength, Tension	3600	lbf
Seismic Strength, Shear	12040	lbf, Hilti Table 16

Acceptable?

TRUE
 TRUE

STEEL STRENGTH

Tension	13410	lbf, Hilti Table 17
Shear	6415	lbf, Hilti Table 17
Seismic Shear	6080	lbf, Hilti Table 17

TRUE
 TRUE
 TRUE



PROJECT INFO

Job Name: **Hyperion Pilot MBR - Plant Drain**
 Company:
 Contact:
 Job Type: **New Station**
 Water Type/Source: **Wastewater (Sewage)**
 Import/Domestic: **Import Acceptable**


PACKAGE/STARTUP

Offering: **Complete System**
 Mechanical: **All by Romtec Utilities**
 Pumps: **By Romtec Utilities**
 Control Panel: **By Romtec Utilities**
 Generator: **N/A**
 Advisor/Startup: **Mechanical & Electrical**
 Turnkey: **No**

DESIGN CRITERIA
FLOW RATE

Peak Inflow: **960** GPM
 Pumping Rate: **700** GPM (of single pump)
 Static Head: **19.5** Feet
 TDH: **30.0** Feet
 TDH Calcs: **Spec**

ACTIVE VOLUME

Max Pump Starts: **10.00** Starts/Hr
 Cycle Time: **6.00** Minutes
 Active Volume: **1050.00** Gallons
 Active Volume: **140.37** Cu Feet
 Well Shape: **Round**
 Well Diameter: **10** Feet
 Well Dimensions: **N/A** **N/A**
 Cross-Section Area: **78.54** Sq Feet
 Min. Depth Required: **1.79** Feet
 Active Depth: **2.00** Feet

STORAGE VOLUME (if required)

Time:
 Minutes
 Flow Rate:
 GPM
 Volume: **0.00** Gallons
 Volume: **0.00** Cu. Feet
 Min. Depth Required: **0.00** Feet
 Storage Depth:
 Feet

ON-SITE POWER

Power: **480V / 3-Phase**

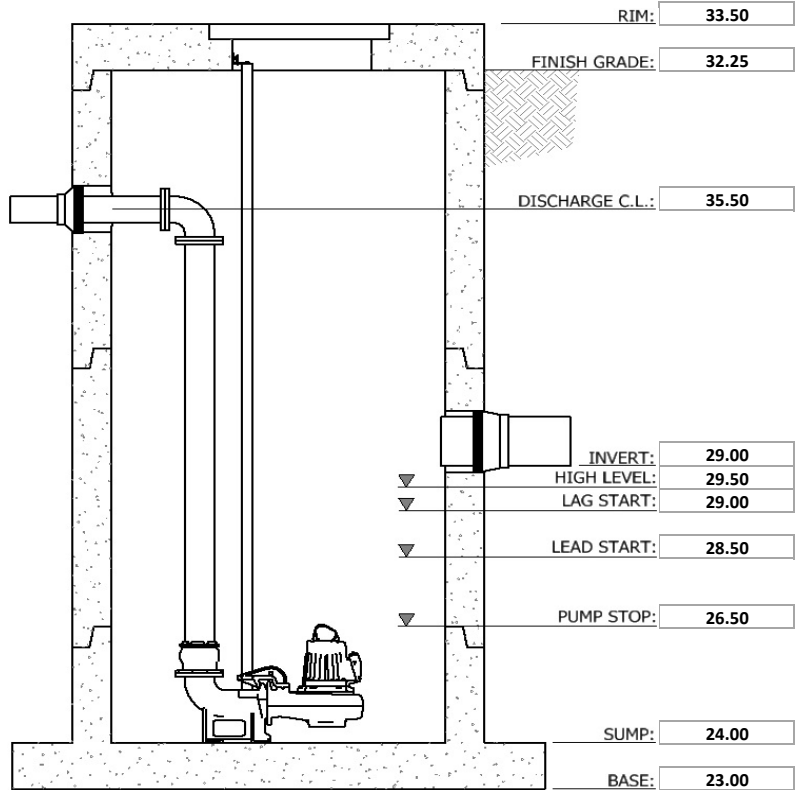
FORCE MAIN

FM Info: **New** **Single FM**
 Length:
 Feet
 FM Discharge: **46.00** Feet
 FM High Point: **46.00** Feet
 (1) (2) (3)
 Nominal ID:

 Type/Rating:

INFLUENT PIPING

Influent Invert: **(1)** **(2)** **(3)**
 Influent Size: **29** **30** **29.45**
 Type: **8"** **12"** **4"**



Note: Image is a preliminary representation of the pumping system.
 Elevations shown are the primary factors used for sizing the wet well.
 Backup levels not shown. Additional (or fewer) level settings may be required.