WEAVER CONSTRUCTION MANAGEMENT, INC.
3679 S. Huron St., Suite 404
Englewood, CO 80110
Phone: (303) 789-4111 FAX: (303) 789-4310

SUBMITTAL TRANSMITAL

September 29, 2011
WCM Submittal No: 11322-001.A

PROJECT: **Harold Thompson Regional WRF**
Birdsall Rd.
Fountain, CO 80817
Job No. 2908

ENGINEER: **GMS, Inc.**
611 No. Weber St., #300
Colorado Springs, CO 80903
719-475-2935 Roger Sams

OWNER: **Lower Fountain Metropolitan Sewage Disposal District**
901 S. Santa Fe Ave.
Fountain, CO 80817
719-382-5303 James Heckman

CONTRACTOR: **Schloss Engineered Equipment, Inc.**
10555 E. Dartmouth Ave., Suite 230
Aurora, CO 80014
303-695-4500 Linda Wood

SUBJECT: Resubmittal for Vortex Grit Chambers

SPEC SECTION: 11322 – Vortex Grit Chambers

PREVIOUS SUBMISSION DATES: 8/8/11

DEVIATIONS FROM SPEC: ___ YES _X_ NO

CONTRACTOR'S STAMP: This submittal has been reviewed by Weaver General Construction and approved with respect to the means, methods, techniques, & safety precautions & programs incidental thereto. Weaver General Construction also warrants that this submittal complies with contracted documents and comprises on deviations thereto:

Contractor's Stamp:	Engineer's Stamp:
Date: 9/29/11 Reviewed by: H.C. Myers (X) Reviewed Without Comments ( ) Reviewed With Comments ENGINEER'S COMMENTS:_____	

RESUBMITTAL COMMENTS

HAROLD D. THOMPSON REGIONAL WATER RECLAMATION FACILITY
FOUNTAIN, COLORADO

ENGINEER: GMS, INC.
CONTRACTOR: WEAVER GENERAL CONSTRUCTION

SPECIFICATION SECTION 11322 – VORTEX GRIT CHAMBERS

SCHLOSS ENGINEERED EQUIPMENT, INC.
PROJECT NO. 1757-11

Schloss Engineered Equipment, Inc. (SEE) is resubmitting on two (2) Type 12CPT grit collectors and a control panel for the above referenced project. Included with this resubmittal are a revised general arrangement drawing, grit test results, and catalog information. The following comments are furnished in direct response to the Engineer's comments on the previous submittal and subsequent conference call with Mr. Roger Sams with GMS, Inc.

1. As previously submitted, SEE will provide the inlet baffle to control flow into the grit chamber. The specified outlet baffle is patented by the named manufacturer in an effort to achieve sole source procurement and exorbitant pricing. It isn't necessary for the specified performance of the grit collectors, and won't be provided by SEE. Grit removal efficiency testing on other installations has been performed that confirms the outlet baffle isn't necessary. The test results from a 16' diameter forced vortex grit collector in Fairfield, CA for Carollo Engineers is attached. In addition, SEE understands the existing forced vortex grit collector SEE previously provided for Fountain is working well.

2. Confirmed.

3.a Confirmed.

3.b The materials are listed on the material list on General Arrangement Drawing 1757-11-A1. For clarification, SEE has revised the material designation HRS (hot rolled steel) to A36.

3.c A Nord cut sheet is attached that indicates the materials for the drive housing and gears.

4. By contractor.

5. The only seals and gaskets for the forced vortex grit collector are in the speed reducer. Therefore, SEE will provide one spare set of seals and gaskets for the speed reducer.

6. By contractor.

7. Typically, start up of the grit equipment takes 1-2 days. Since Fountain is so close to SEE headquarters in Aurora, additional visits will made if necessary. This worked well for the existing grit equipment SEE previously provided to Fountain.

8. The elevation of the bottom of the tank has been revised to 5414.17. Elevations 5417.33 and 5415.33 have been removed as directed by the Engineer. The elevation of the bottom of the tank in Section C-C has been revised to 5414.17. SEE apologizes for the confusion.

9. As directed by Mr. Roger Sams with GMS, SEE submitted a single NEMA 12 control panel with the components appropriate for the SEE provided grit system. The panel previously submitted is designed to integrate the operation of the grit removal system, including Specification Sections 11322, 11314, and 11321. Cut sheets were provided for the major components, and the provided material list reflected all components and part numbers. Applicable operation information will be provided in the Installation, Operation and Maintenance Manuals. If the Engineer has a question on a specific component, please don't hesitate to contact us.

Contractor to verify voltage and all dimensions. 9/28/11

Schloss Engineered Equipment, Inc.

Type CPT Forced Vortex Grit Removal Equipment
Type 12SW-CL Grit Classifier with Cyclone

Project:	**Primary Treatment Expansion Project**
Owner:	**Fairfield-Suisun Sewer District**
Engineer:	**Carollo**
SEE Project No:	**1698-08**

Start-up and Testing Procedure – SUBMITTAL # 11321-515.1 (APPROVED)

Specification Section: 11322 – Mechanically Induced Vortex Grit Removal Equipment
Specification Section: 11321 – Grit Dewatering Units

Table Of Contents

Equipment Legend

Reference: Specification 11322 - Mechanically Induced Vortex Grit Removal Equipment and Specification 11321 – Grit Dewatering Units

Item	Equipment Number
Forced Vortex Grit Equipment	ME-C-3
Grit Dewatering Units	ME-C-4
	ME-C-5
	ME-C-6

Test Requirements

Specification Section 11322 Performance Requirements with Particles of 2.65 or Greater Specific Gravity:

95% Removal of Greater than 50 Mesh Grit
85% Removal of 50-70 Mesh Grit
65% Removal of 70-100 Mesh Grit

Test Results

Specific Gravity 2.66

Influent

50 Mesh Weight	28.4 g
70 Mesh Weight	21.7 g
100 Mesh Weight	9.6 g
Pass 100 Mesh Weight	3.0 g

Effluent

50 Mesh Weight	0.18 g
70 Mesh Weight	0.30 g
100 Mesh Weight	0.43 g
Pass 100 Mesh Weight	1.27 g

Removal Efficiency

50 Mesh	((28.4-0.18)/28.4)(100) = 99.4% Removal Exceeds 95% Specified
70 Mesh	((21.7-0.30)/21.7)(100) = 98.6% Removal Exceeds 85% Specified
100 Mesh	((9.6-0.43)/9.6)(100) = 95.5% Removal Exceeds 65% Specified

SGS

Analysis Report

May 13, 2010

Schloss Engineered Equip, Inc.
10655 E. Dartmouth
#230
Aurora, CO 80014
USA

Client Sample ID: 1l thru 4l
Date Received: 04/19/2010
Matrix: Unknown

SGS Minerals Sample ID: 072-46226-001

Tests	Result	Unit	Method
Solids, Total	1.67	%	SM2540 B
Specific Gravity, True	2.66		ASTM D 167
Solids, Total Volatile	2.85	%	SM2540 G

Sample Notes:

Corrected Report

Method Reference(s):
"Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992; APHA-AWWA-WEF

Somer Rodriguez, Denver Laboratory

SGS North America Inc. | Minerals Services Division
4665 Paris St Suite B-200 Denver CO 80239
t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

SGS

Analysis Report

May 13, 2010

Schloss Engineered Equip, Inc.
10555 E. Dartmouth
#430
Aurora, CO 80014
USA

Client Sample ID: 1I thru 4I
Date Received: 04/19/2010
Matrix: Unknown

SGS Minerals Sample ID: 072-45225-001

SIEVE ANALYSIS (ASTM D 4749/293)

				Cumulative Results	
Passing	Retained On	Weight	% Weight	% Retained	% Passing
-----	#50	28.4g	45.30	45.30	54.70
#50	#70	21.7g	34.61	79.91	20.09
#70	#100	9.6g	15.31	95.22	4.78
#100	-----	3.0g	4.78	100.00	0.00

Sample Note:
Sieve analysis performed on sample ignited at 550°C.

Somer Rodriguez, Denver Laboratory

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4665 Paris St Suite B-200 Denver CO 80239
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SGS

Analysis Report

May 13, 2010

Schloss Engineered Equip, Inc.
10555 E. Dartmouth
#430
Aurora, CO 80014
USA

Client Sample ID: 1E thru 4E
Date Received: 04/19/2010
Matrix: Unknown

SGS Minerals Sample ID: 072-45225-002

SIEVE ANALYSIS (ASTM D 4749/293)

				Cumulative Results	
Passing	Retained On	Weight	% Weight	% Retained	% Passing
-----	#50	0.18g	8.26	8.26	91.74
#50	#70	0.30g	13.76	22.02	77.98
#70	#100	0.43g	19.72	41.74	58.26
#100	-----	1.27g	58.26	100.00	0.00

Sample Note:
Sieve analysis performed on sample ignited at 550°C.

Somer Rodriguez, Denver Laboratory

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4665 Paris St Suite B-200 Denver CO 80239
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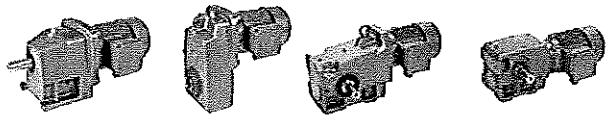
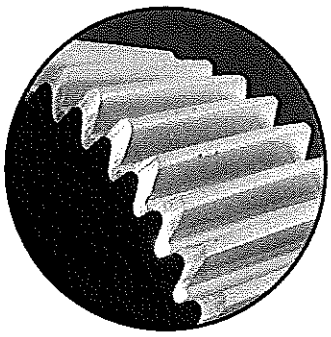
Key Features



Gearing

The gears are made from high strength steel forgings. The teeth are case-hardened then precision finished using either grinding or skive-hobbing methods. As a result, high tooth-to-tooth accuracy is ensured which delivers steady output motion. Tooth stresses are controlled to assure very long durability with infinite life of the gear teeth. Gear torque ratings are thus optimized for a high degree of reliability.



Gear Quality Level: AGMA Class 11-13.

Gear Hardness: Case hardened to 58-62 Rockwell-C.

Gear Finish: All high-speed gears are ground; low-speed gears are skive finished after hardening.

Edge Deburred Gearing.

Designed for infinite life

High-Strength Gearcases

Standard housing material is Class 35 Cast Iron. Some units utilize a corrosion resistant aluminum alloy or diecast aluminum alloy housing material.

NORD's robust housings maintain heavy wall sections. Some competitors have reduced material used in their housings for cost savings. Material has been reduced to the point that the walls are too thin and can flex under load. This will misalign the gears and bearings. In addition, bearing outer races need to be supported with a stiff backing to achieve their rating. Thin housings may not properly support the outer bearing races. Housings are internally painted with a primer to seal casting process residue and fill any surface imperfections.

Lubrication

NORD Gear supplies most all gear units factory-filled with the appropriate oil lubrication type and fill-level per the specified reducer mounting position. The current exceptions include Clincher™ Series parallel-shaft gear units: SK10282, SK10382, SK11282, SK11382, SK12382, and SK9096.1 which are supplied without oil.

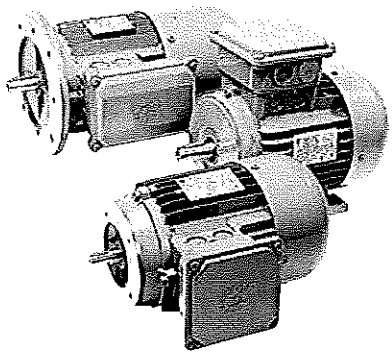
It is important that proper oils are used in a gear reducer. By supplying the appropriate lubricant type and amount, NORD Gear eliminates the "guess work" for the consumer.

Properly selected oil will have the required additives to prevent the unwanted formation of foam, oxidation, and rust. As well, the proper extreme pressure additive may be used for hardened alloy steels, or more importantly, not used when it will be a detriment to the bronze gearing in worm reducers. For additional technical information please reference the Lubrication section of this catalog beginning on page 36.

Please see the lubrication table on page 42 for the standard and optional reducer lubrication types, and their service temperature ranges.

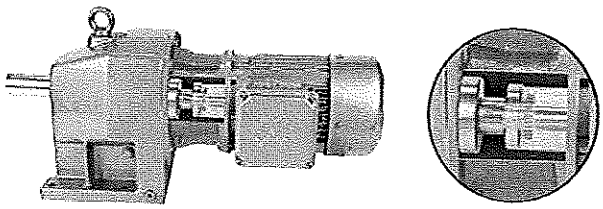
High-Performance Motors & Brakemotors

NORD motors are designed to run cool for longer service life. Low rotor inertia and high starting torque allow peak performance in the most difficult applications for inverter and vector duty per NEMA MG 1-2006 Section 31.4.4.2 voltage spikes. Our motors are internationally accepted, conforming to North American NEMA MG 1 and international IEC electrical specifications. High performance options include brakes, encoders, and forced cooling fans.



Compact Coupled (NEMA C-face Input)

NORD Gear supplies reducers with special couplings that eliminate the need for quill-type input with NEMA and IEC frame motors. This allows for superior input shaft alignment and smooth torque transfer, reducing incidents of bearing, shaft, and key failures. Smaller reducers use a proprietary one piece nylon, curved tooth gear coupling with a bronze insert. These materials were selected for their ability to accommodate misalignment, as well as corrosion protection. The bronze insert eliminates steel-to-steel contact allowing ease of motor disassembly even after years of service. Quill-type inputs have steel-to-steel contact between the motor shaft and the quill-input shaft of the reducer. This metal-to-metal contact will undergo fretting corrosion, especially in corrosive or moist environments. Each reducer is shipped from the factory with a sticker on the coupling that shows the proper coupling placement from the motor mounting surface.



Energy Efficient

Combining the UNICASE™ close dimension control and torsionally stiff, stable housings with high quality gearing results in higher operating efficiencies. Our industry leading 98.5% efficiency per gear stage results in significant power savings over the long haul.

Lowering your operating costs is one of our greatest goals! NORD research and development focuses on energy efficiency, with gearboxes, motors, and frequency inverters designed for lower energy consumption. Our fully diverse line of in-line or right-angle units and motors has been developed to suit your needs.

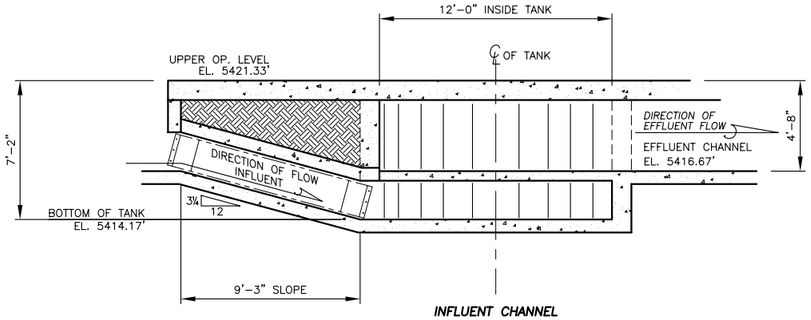
Stainless Steel Paint

NORD stainless steel paint is a plural component, aliphatic polyurethane paint with 316 stainless steel flakes with outstanding physical properties and excellent appearance. This paint has excellent adhesion to cast iron, steel, aluminum and most plastics and can be used as a topcoat or as a primer. The NORD stainless steel paint also has outstanding exterior durability and corrosion resistance, and superior chemical resistance when exposed to most industrial solvents, lubricants and cutting oils. The NORD stainless steel paint is excellent for both indoor and outdoor duty and is non-flammable.

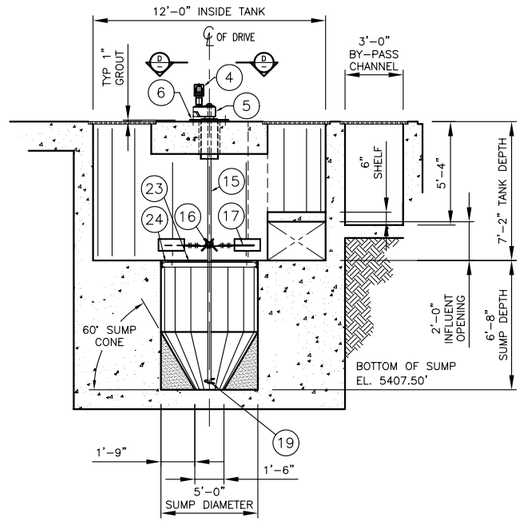
It is designed as a USDA incidental contact coating acceptable for use in food, drug and cosmetic industries. Incidental contact means that the paint may not contain antimony: arsenic, cadmium, lead, mercury, selenium or other materials such as carcinogens, mutagens, or teratogens classified as hazardous substances.

Recapping NORD Stainless Steel Paint Features:

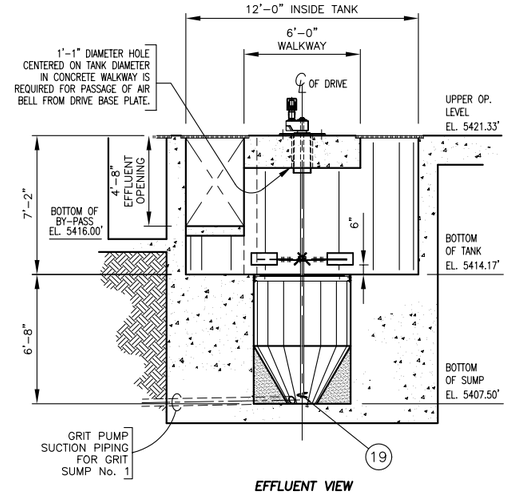
- Solvent based polyurethane paint for increased durability
- Outstanding exterior durability and corrosion resistance
- Superior chemical resistance when exposed to industrial solvents (laquer thinner, acetone, gasoline, Xylol), lubricants, and cutting oils
- Cured coating develops 2H hardness, yet exhibits excellent high impact resistance
- Heat and humidity resistant (tested for 500 hours at 100% humidity and 100°F)
- USDA/H1 compliant - incidental contact
- Colors – Stainless steel gray, white, blue, red, black, and orange



INFLUENT CHANNEL
SECTION A–A

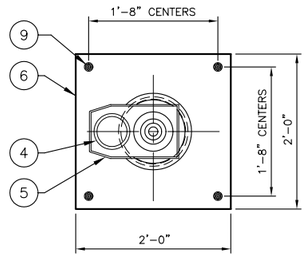


INFLUENT VIEW
SECTION B–B
VIEW ROTATED 90° – CW

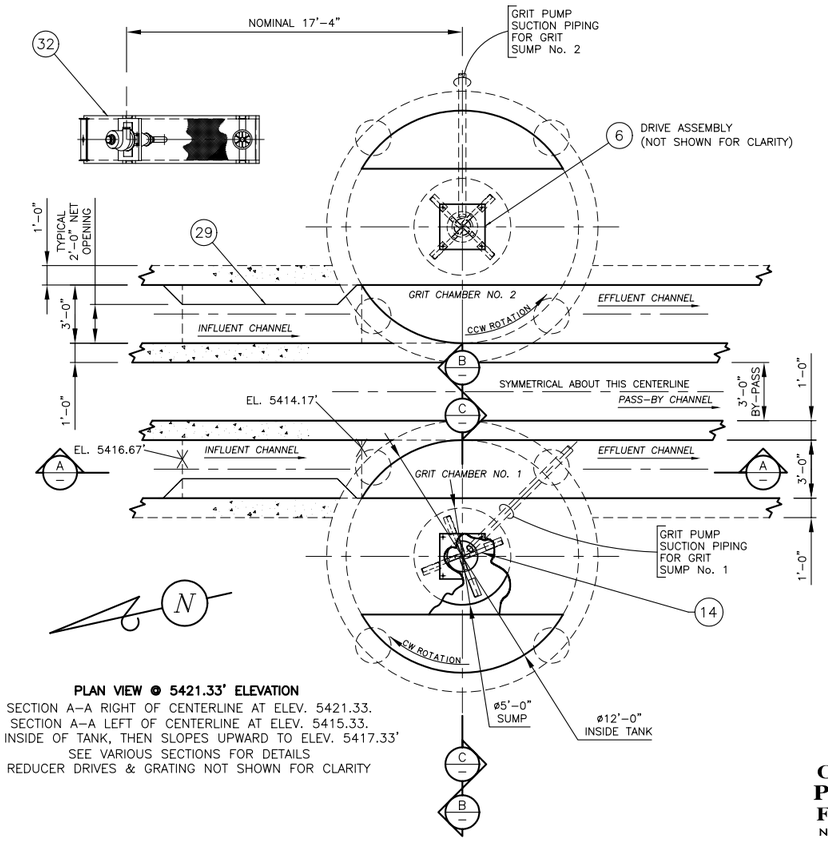


EFFLUENT VIEW
SECTION C–C
VIEW ROTATED 90° – CCW

REFER TO PLAN VIEW FOR ACTUAL PIPING ORIENTATION OF PUMP SUCTION EMBEDDED PURGE PIPING



VIEW D–D
ENLARGED 4x VIEW FOR CLARITY



PLAN VIEW @ 5421.33' ELEVATION
SECTION A–A RIGHT OF CENTERLINE AT ELEV. 5421.33.
SECTION A–A LEFT OF CENTERLINE AT ELEV. 5415.33.
TO INSIDE OF TANK, THEN SLOPES UPWARD TO ELEV. 5417.33'
SEE VARIOUS SECTIONS FOR DETAILS
REDUCER DRIVES & GRATING NOT SHOWN FOR CLARITY

MATERIAL LIST

INDENTIFICATION GROUP	PIECE	QUAN.	SPECIFICATION DWG. OR PART NO.	SPECIFICATION NAME, DESCRIPTION, MATERIAL	REFERENCE	SYMBOL
	1	TWO		FORCED VORTEX GRIT COLLECTOR (1) CW AND (1) CCW		
				EACH CONSISTING OF THE FOLLOWING:		
	3	ONE	.03	DRIVE ASSEMBLY		
	4	1		MOTOR, 1.5 HP, 1800 RPM, 230/460V-60-3, XP		
	5	1		SPEED REDUCER		
	6	1		DRIVE BASE WITH AIR BELL	A-36 STEEL	
	7	1		TUBE, CAULK	SILICONE	
	8	LOT		ASSEMBLY FASTENER	STAINLESS STEEL	
	9	4		EPOXY ANCHOR, 5/8" X 6" LG	18-8 SST	
	14	ONE	.02	IMPELLER ASSEMBLY, NOMINAL 60" DIA		
	15	1	NOTE 8	SHAFT	C1045	
	16	1		IMPELLER HUB	C1018	
	17	1	NOTE 8	ADJUSTABLE IMPELLER BLADE	A36	
	18	LOT		ASSEMBLY FASTENER	18-8 SST	
	19	1	NOTE 8	GRIT LIFT VANE	A36	
	22	ONE	.03	GRIT CHAMBER FLOOR PLATE ASSEMBLY		
	23	1		FLOOR PLATE, 1/2" THICK (2-PIECE)	A36	
	24	1		SUPPORT BEAM	A36	
	25	2		SUPPORT BRACKETS	A36	
	26	LOT		ASSEMBLY FASTENERS	18-8 SST	
	27	12		EPOXY ANCHOR BOLT, 1/2" X 7"	18-8 SST	
	29	ONE		INLET BAFFLE	A36	
	30	6		EPOXY ANCHOR, 1/2" X 7"	18-8 SST	
	32	ONE		12 SW GRIT WASHER – REF TO SEE DWG. 1757-11-C1		
	34	TWO		GRIT PUMP		
	35			ELECTRICAL CONTROL, PER SCHLOSS DWGS A2 & A3		
	37			OPERATION AND MAINTENANCE MANUALS		

GENERAL NOTES:

1. SURFACE PREPARATION, PAINTING AND PROTECTIVE COATINGS
   A. FABRICATED STEEL–NON IMMERSION: COMMERCIAL BLAST CLEAN SSPC–SP6 FOR SYSTEM 66–1 TNEMEC PAINT
      PRIME COAT: 66–1211 3.0–5.0 MILS DFT
      FINISH COAT: BY OTHERS
   B. FABRICATED STEEL, IMMERSION: COMMERCIAL BLAST CLEAN SSPC–SP10 FOR SYSTEM 66–1 TNEMEC PAINT
      PRIME COAT: 66–1211 3.0–5.0 MILS DFT
      FINISH COAT: BY OTHERS
   C. ITEMS NOT TO BE PAINTED: GALVANIZED STEEL, STAINLESS STEEL, MACHINED SURFACES, FINISHED ITEMS
   D. MACHINED SURFACES SHALL BE COATED WITH PROTECTIVE FILM OR GREASE AS DETERMINED BY SERVICE
2. GROUTING OF EQUIPMENT TO BE DONE ONLY AFTER ALIGNMENT IS COMPLETED AND TEST RUN IS PERFORMED.
3. EQUIPMENT LABOR AND MATERIALS FURNISHED BY OTHERS UNLESS OTHERWISE SPECIFIED (I.E. NOT BY SCHLOSS ENGINEERED EQUIP.) UNLOADING, INSTALLATION & ERECTION, PIPING & WIRING, GROUT & GROUTING, MOTOR STARTERS & CONTROLS, SAFETY GUARDS OTHER THAN THOSE PROVIDED, ACCESS PLATFORMS & LADDERS AND ALL WARNING SIGNS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   "DO NOT PUT HANDS OR TOOLS IN MOVING MACHINERY" AND
   "CAUTION THIS MACHINE CONTROLLED AUTOMATICALLY AND MAY START ANYTIME."
4. ALL LUBRICANTS TO BE FURNISHED BY OTHERS TO SUIT LOCAL CONDITIONS PER INSTALLATION INSTRUCTIONS.
5. THIS DRAWING IS THE PROPERTY OF SCHLOSS ENGINEERED EQUIPMENT, INC. USE OF THIS DRAWING OR ANY INFORMATION THEREON FOR OTHER THAN ITS INTENDED PURPOSE IS EXPRESSLY PROHIBITED.
6. CAUTION: THIS EQUIPMENT MUST BE ASSEMBLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE SERVICE INSTRUCTIONS. FAILURE TO DO SO MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR PROPERTY DAMAGE. ADDITIONAL COPIES OF THE SERVICE INSTRUCTIONS ARE AVAILABLE FROM SCHLOSS ENGINEERED EQUIPMENT, INC.
7. PIPING AND ALL SUPPORTS BY OTHERS. REFER TO PLAN VIEW FOR PREFERRED ORIENTATION OF GRIT PUMP SUCTION AND WATER PURGE LINE. FINAL ORIENTATION BY OTHERS.
8. THE PITCH OF THE GRIT LIFT VANE MUST BE THE SAME PITCH DIRECTION AS THE PITCH DIRECTION OF TURBINE BLADES. THE PITCH DIRECTION FOR BOTH THE TURBINE BLADES AND THE GRIT LIFT VANE MUST LIFT THE GRIT IN AN UPWARD DIRECTION.

CONFIDENTIAL
PRELIMINARY
FOR APPROVAL
NOT FOR CONSTRUCTION

REVISED
DESTROY PREVIOUS PRINTS
September 29, 2011

TITLE TYPE: (2) 12 CPT FORCED VORTEX GRIT COLLECTOR			
12'-0" DIAMETER			
GENERAL ARRANGEMENT AND ASSEMBLY			
FOR: HAROLD D. THOMPSON RWRF, FOUNTAIN, CO	A	9/29/11	REV PER ENGR'S COMMENTS
ENGINEER: GMS, INC., COLORADO SPRINGS, CO	REV.	DATE	DESCRIPTION OF REVISION

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES
DIMENSIONAL TOLERANCES: DECIMALS .XX=±.05 .XXX=±.010; ANGULAR ±°; FRACTIONAL ±1/32"

DRAWN GTW | CHECKED | APPROVED CMS
DATE 7/11/11
SCALE 1/4"=1'-0"

SCHLOSS ENGINEERED EQUIPMENT, INC.
AURORA, COLORADO

REFERENCE
1757–11–A1

1757-11-A1

FORM: SEE2234A 110711

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