

ADVANCED ENVIRO))SEPTIC^{MD}

Prepared for: Exploits Engineering Consultants Ltd.
Superior Glove Mftg Facility
Springdale, NL



**Innovative Development
& Design Engineers Ltd.**

Anderson House, 42 Power's Court
St. John's, NL A1A 1B6
Tel: (709) 368-8870
www.iddel.ca

DRAWING LIST	
Sheet Number	Sheet Name
M100	NOTES
M101	SITE PLAN
M102	ENLARGED SITE PLAN
M103	AES PLAN AND ELEVATIONS
M104	AES SECTION AND DETAILS

ENVIRONMENTAL

1. PROJECT INFORMATION

Site Information:

- Lot Size: 24289m²
- Site is partially developed and free of vegetation.
- Site is service by: Drilled Well (shown on M101)

Building Information:

- Glove Factory called Superior Glove
- Floor Area: 2448.18m²
- 1 storey

2. SOIL HYDRAULIC CONDUCTIVITY

Percolation Test Results:

- P1 - 72.7 sec / 25.4mm
- P2 - 83.3 sec / 25.4mm

- Soil Type is a gravelly silty sand.
- No bedrock or water table observed at 2.0m.

Refer to Geotechnical Report completed by AllRock Consulting Ltd. in Appendix A.

3. HYDRAULIC LOAD CALCULATIONS

Office/Showroom:

- Area = 154 m²
- Daily Sewage Flow/m² = 6 L/day/m²
- Total Sewage Flow = 154 x 6 = 922 L/day

Mill Shop:

- # of employees over 3 shifts = 80 employees
- Daily Sewage Flow/employee = 115 L/day
- Total Sewage Flow = 80 x 115 = 9200 L/day

TOTAL SEWAGE FLOW= 10,122 L/day

- Maximum Hydraulic Loading Rate as per CSA B65-12 regulations: 59-88 L/m²/day
- Disposal Field Area: 144m²

Maximum Total Hydraulic Load:

- 144m² x 88L/m²/day = 12,672 L/day

4. ADVANCED ENVIRO SEPTIC (AES) SPECIFICATIONS

- Class BIII sewage system
- AES Disposal Field: 18 branches of 15.3m per branch = 274.5m of pipe in total
- Linear Loading Rate: 36.87 L/day/m
- Amount of System Sand Required: 237 metric tons.

5. SITE SPECIFIC NOTES

- Site is flat and cleared in area of septic.
- No neighbouring wells within required separation distances.

6. SEPTIC TANK SPECIFICATIONS

- Septic Tank Size: at least 10,122L (2249 Imp. Gal)
- See Appendix A for Septic Tank Shop Drawings.
- Septic and holding tanks must conform to CAN/CSA B66-10 standards.
- Construction joints to be sealed with butyl rope or equivalent.
- Maximum bury: 5 feet (1.5 meters)
- All tanks, risers, covers, inspection/maintenance access, and pump out access must be watertight.
- All tanks must be assembled and installed as per manufacturers instructions.
- All tank structures to have minimum 150mm compacted depth of 25mm dia. crushed run gravel or 25mm dia. clear crushed stone bedding.
- Sanitary Pipe from house must be MAX. 500mm below finished grade (Do not put sanitary line below footing).
- Do not used fiberglass reinforced plastic tank at a depth greater than 1200mm from top of tank (risk of cracking)
- Steel tanks run risk of corrosion depending on soil acidity and tank contents.

7. GENERAL REQUIREMENTS

- Backwash water from water treatment devices must not be discharged to the on-site sewage system.
- Roof, foundation and lot drainage must be directed away from the disposal field and septic tank.
- Backfill against foundation to be graded to slope away from disposal field.
- All work must be completed in accordance with the Service NL on-site sewage system regulations, conditions of approval, and Advanced Enviro Septic instructions.
- Installation shall be performed by a certified Advanced Enviro)) Septic installer or request that an Advanced Enviro)) Septic representative supervise the installation.

8. LANDSCAPING REINSTATEMENT SPECIFICATIONS

- All disturbed ground to be covered with a minimum 100mm of topsoil, unless otherwise approved by the engineer, and seeded or covered with sod.
- Prior to placement of topsoil, material larger than 200mm in diameter must be removed from the disturbed surface.
- It is the contractors responsibility to complete seeding or sodding when seasonal conditions permit.

9. AES SYSTEM SAND SPECIFICATIONS

- AES system sand is a clean, granular, coarse to very coarse sand, free of organics.
- AES system sand should contain less than 3% fines (Clay and silt)
- AES system sand extends a minimum of 6" in every direction around the pipe
- We recommend confirming system sand meets specifications by obtaining a sieve analysis.
- Manufactured sand is acceptable for system sand provided it meets the specifications

AES SYSTEM SAND SPECIFICATION				
System Sand Contains:	% by Weight	Particle Size (mm)	Particle Size (in)	Sieve # Reference
Gravel (up to 3/4")	0% - 35%	2mm - 76mm	5/64" - 3/4"	Passes 3/4" - Retained #10
Sand (Coarse & Very Coarse)	40% - 90% (the more the better)	0.5mm - 2.0mm	1/64" - 5/64"	Passes #10 - Retained #35
Fines (Silt & Clay)	No more than 3% CRITICAL	<0.075mm	<0.0029"	Passes #200

SIEVE ANALYSIS INTERPRETATION		
Comparison of ASTM C-33 and AES System Sand		
Sieve Size	ASTM C-33 Fine Aggregate	AES Specifications
3/4"		0% retained
3/8"	100% passing	"Gravel"
#4	95%-100% passing	
#8	80%-100% passing	
#10		<35% retained
#16	50%-85% passing	"Coarse to Very Coarse Sand"
#30	25%-60% passing	
#35		40%-90% retained
#40		
#50	5%-30% passing	
#100	0%-10% passing	
#200		"Fines" (silt & clay) <3% Max. pass - CRITICAL



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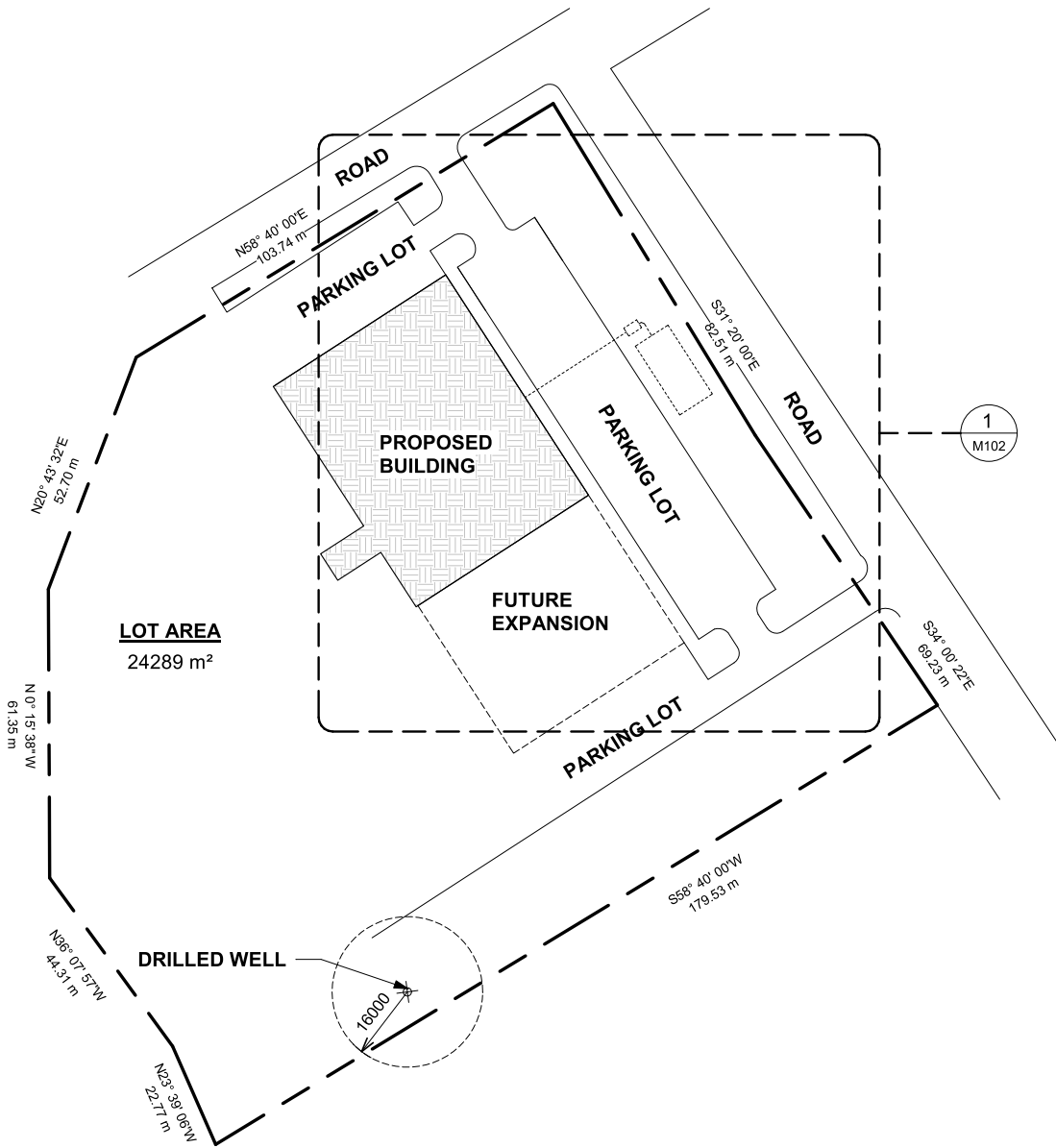
Approved Designer:
Hubert Alacoque, P.ENG, MBA
AD 2011 105516

Client: **EXPLOITS ENGINEERING CONSULTANTS LTD.**

Project:
ADVANCED ENVIRO SEPTIC
SUPERIOR GLOVE MFTG FACILITY, SPRINGDALE, NL

Drawing Title:
NOTES

Drawing No.:
M100



Notes:

1. All drawing units are in millimeters (mm) unless otherwise specified.
2. Do NOT scale drawings.
3. Contractor shall verify location of all wells, watercourses, lot boundaries.
4. Property boundaries shown have been derived from a legal survey. This drawing package is not a plan of survey or location certification.
6. The boundaries and buildings shown are representation only and are subject to a field survey.
4. Proposed driveways shown are for reference only. Actual driveway location is by others receiving approval in accordance with any and all applicable provincial, municipal and local bylaws.
5. It is the clients responsibility to ensure that the construction of foundations, driveway, well or any other development on the lot will not impact on the feasibility of on-site sewage disposal systems in Newfoundland and Labrador.



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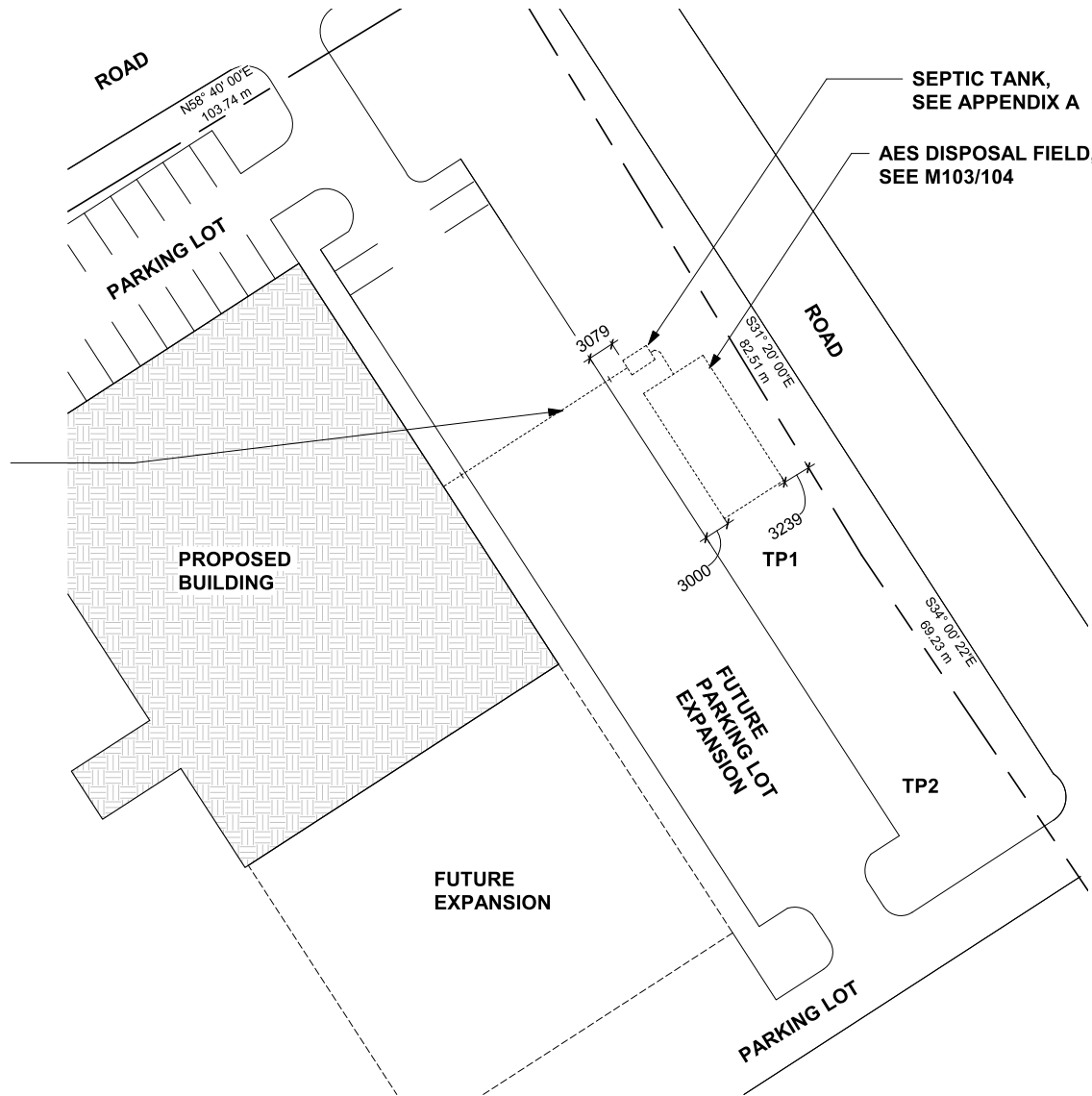
Drawing Title:
SITE PLAN

Drawing No.:
M101

1
M101
AES Site Plan
 1 : 1000

SECTION OF PVC CROSSING PARKING LOT TO BE IPEX DR35 (TYPE PSM) 150mmØ AS PER DEPT. TRANSPORTATION AND WORKS MASTER SPECIFICATION SECTION 02530 SANITARY SEWAGE - PART 2.1 (1) WITH 1/2" MINUS BEDDING AS PER SECTION 02530 -PART 2.4.1 (2). SLOPED AT 2%

NOTE: DUE TO THE LENGTH OF THE PIPE FROM THE BUILDING TO THE SEPTIC TANK, CLEAN OUTS WILL BE REQUIRED. THERE SHALL BE A 150mm CLEANOUT LOCATED WITHIN THE BUILDING NEAR SEWER OUTFALL AND A 150mm CLEANOUT LCCATED NEAR THE SEPTIC TANK.



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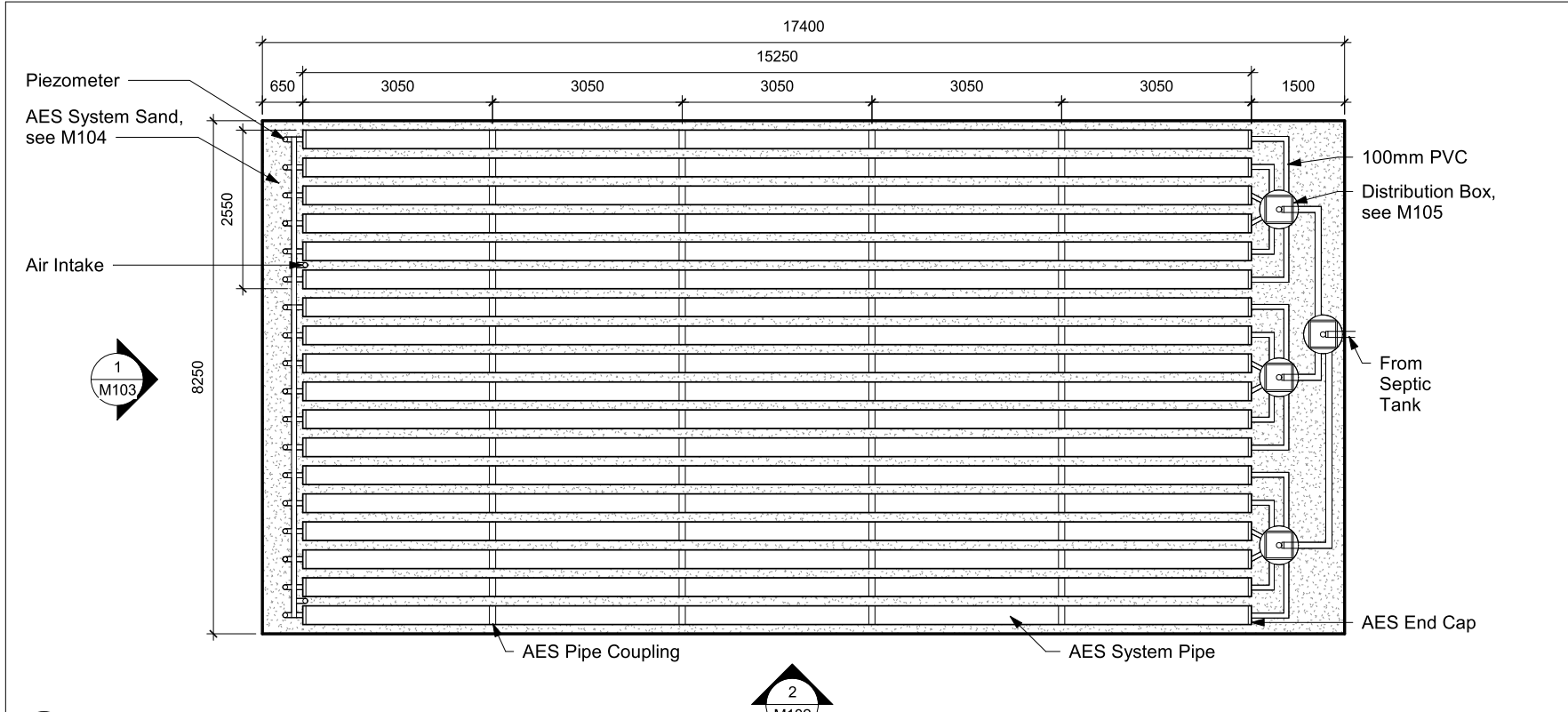
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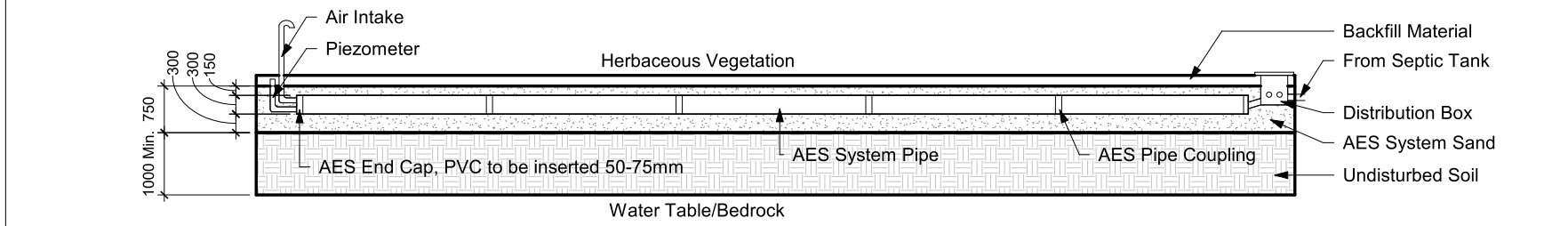
Drawing Title:
ENLARGED SITE PLAN

Drawing No.:
M102

1 AES Enlarged Site Plan
 M102 1 : 550



1 AES System Plan
M103 1 : 70



2 AES System Elevation
M103 1 : 70

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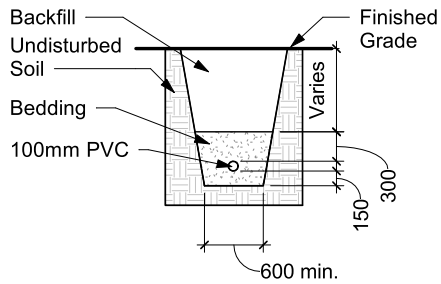
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SPRINGDALE, NL

Drawing Title:
AES PLAN AND ELEVATIONS

Drawing No.:
M103

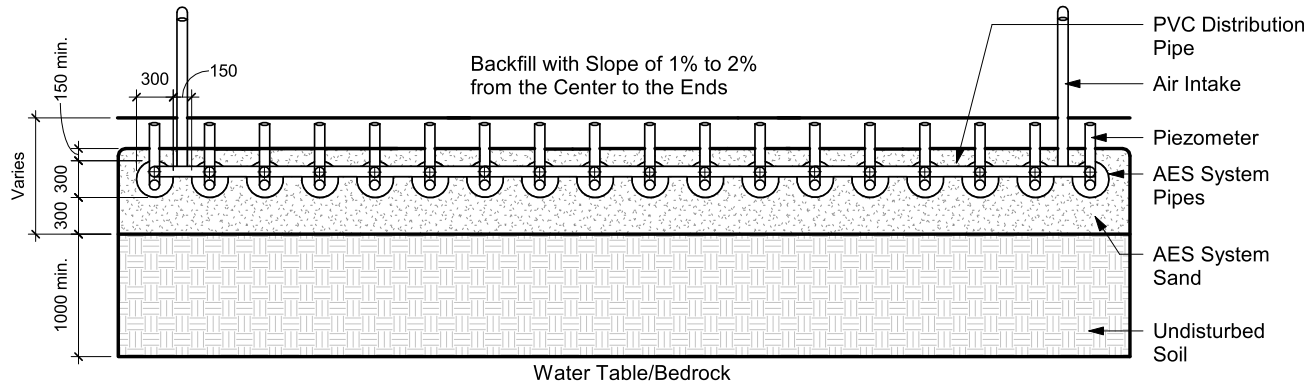


MINIMUM SEPARATION DISTANCES		
Object	Distance from Septic Tank (meter)	Distance from Absorption Field (meter)
Dug Wells	30	30
Drilled Wells	16	16
Surface Waters (not marine)	30	30
Marine Waters	15	15
Buildings	1.5	6
Property Boundaries	1	3
Embankments	3	4.5
Water Service Lines	4.5	7.5
Watermains	15	15

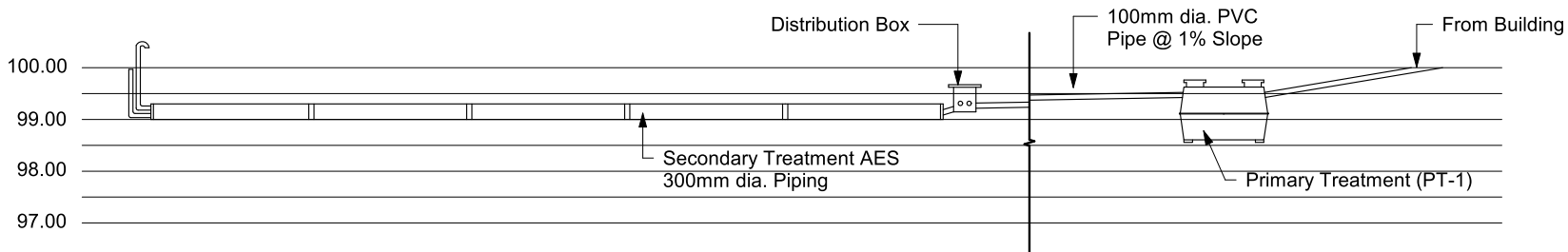
MINIMUM SEPARATION DISTANCES		
Object	Distance from Septic Tank (meter)	Distance from Absorption Field (meter)
Easements/Right-of-Ways	3	3
Driveways	3	3
Building Weeping Tiles		4.5
Roadside Ditches		4.5
Barachois		30
Water Table (to bottom of trench)		1
Utility Service		1
Dwelling without perimeter Drain		3

1 Typical Sewer Trench Detail
M104 1 : 50

2 Min. Separation Distances
M104 1 : 1



3 AES End Elevation
M104 1 : 40



4 AES System Section
M104 1 : 90



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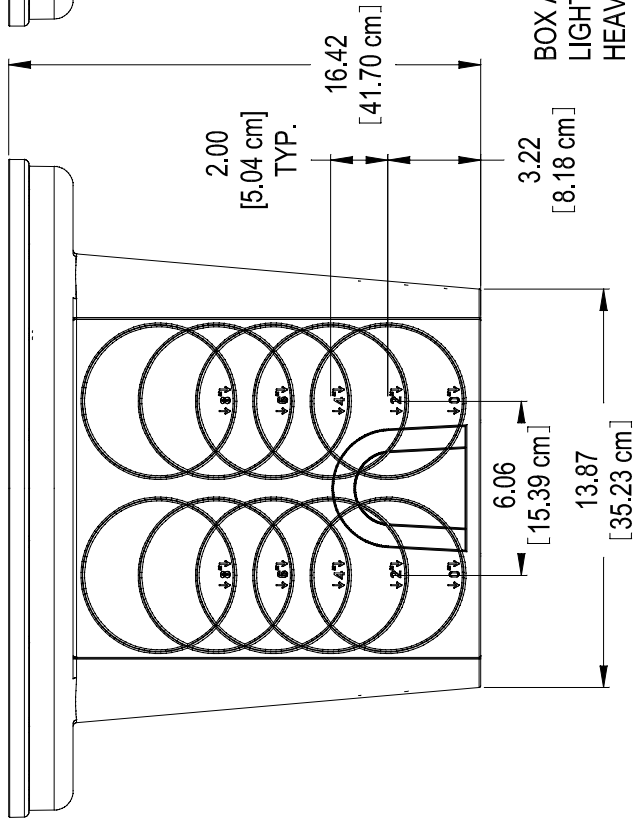
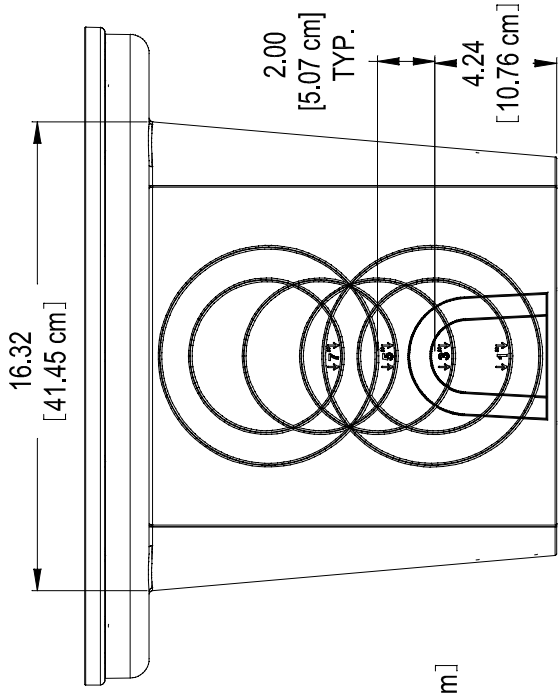
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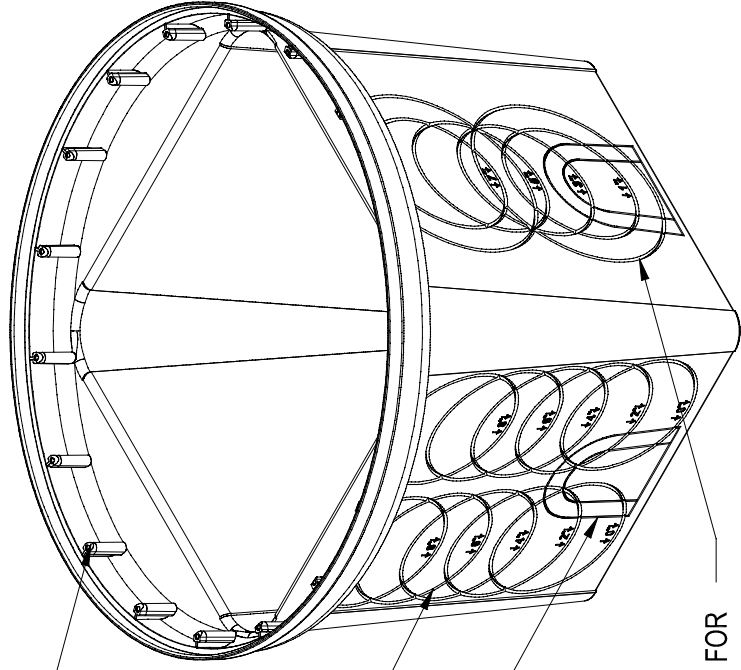
Project:
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SUPERIOR GLOVE MFTG FACILITY, SPRINGDALE, NL

Drawing Title:
AES SECTION AND DETAILS

Drawing No.:
M104



BOX ACCEPTS:
 LIGHT COVER PART NO. - 3009C
 HEAVY COVER PART NO. -3017-C20
 GRATE- PART NO. -3017-G20
 6" TALL RISER PART NO. 3009
 12" TALL RISER PART NO. 3009-R12

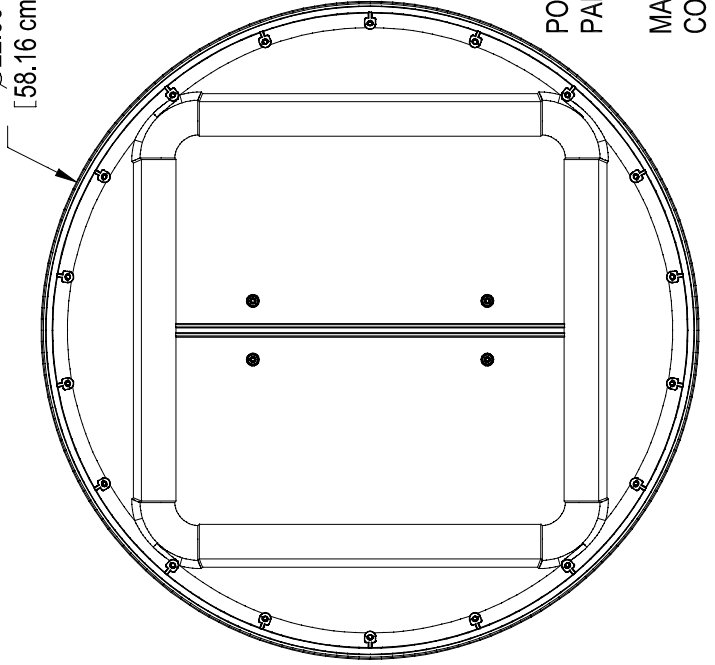


CUT OUTS FOR
 4" PIPE (4 SIDES)
 FOR USE WITH
 PART # 3001

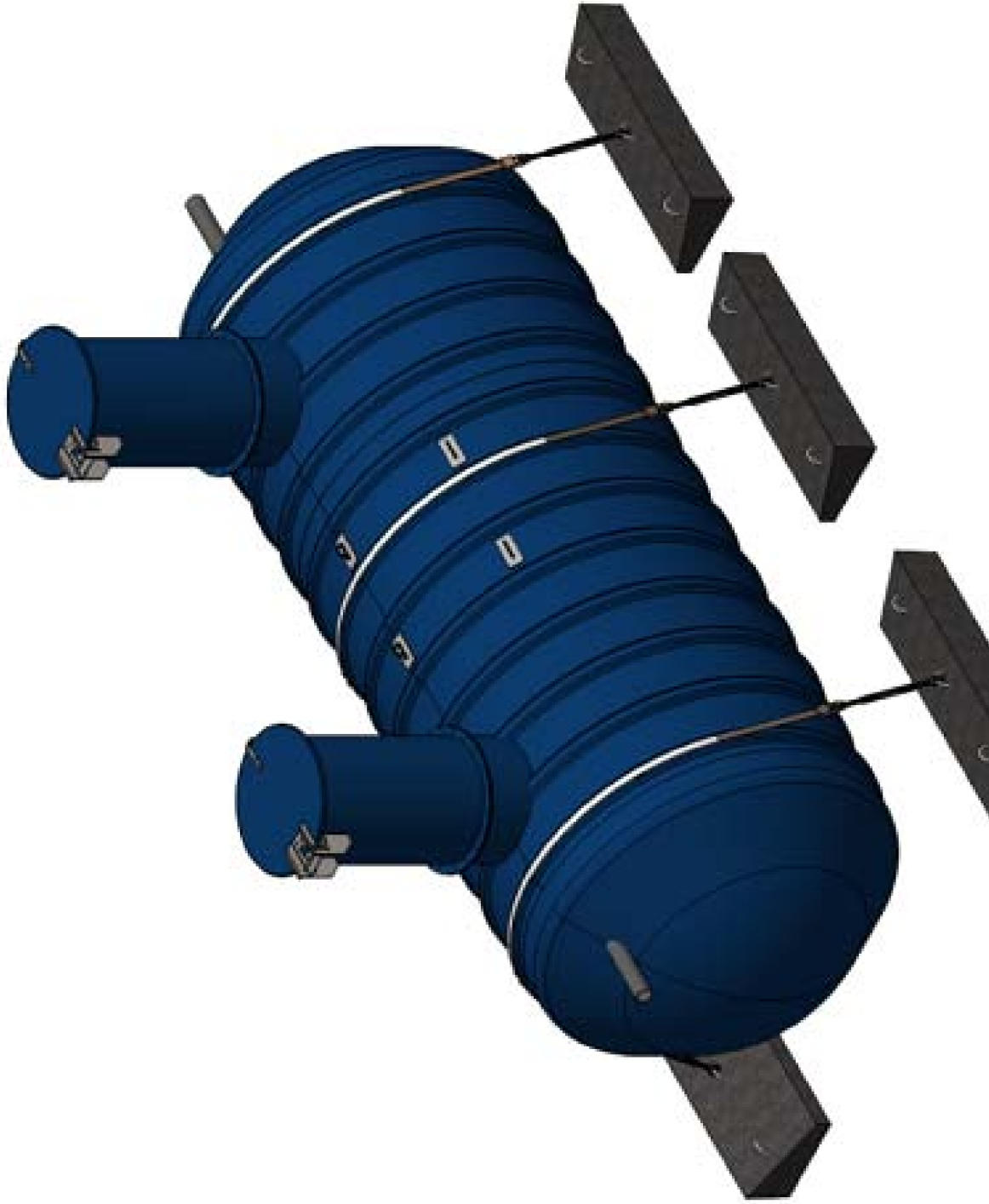
CUT OUTS FOR
 VALVE / METER BOX
 CONVERSION

CUT OUTS FOR
 6" PIPE
 2 SIDES- 6 HOLE
 1 SIDE - 7 HOLE
 FOR USE WITH
 PART # 3001-6

Ø22.90
 [58.16 cm]



POLYLOK 6 & 7 HOLE 20" D-BOX
 PART NO. 3017-206 - 6 HOLE
 3017-207 - 7 HOLE
 MATERIAL - POLYPROPYLENE
 COLOR - BLACK



Proposed FRP Septic Tank to be used,
specifications shown below.

Capacity: 10.21 Cubic Meters

Diameter: 2m

Length: 3.25m

Instructions: All applicants must complete items 1-11. Complete sections 12-17 as applicable. This form along with the appropriate fees and drawings must be sent to the appropriate regional office. For projects located in the Central, Western and Labrador regions please forward the application package to the Corner Brook Government Service Centre, or by email to GSCWesternApplications@gov.nl.ca. For projects located in the Eastern and Avalon regions please forward the application package to the Mount Pearl Government Service Centre, or by email to GSCAvalonPlans@gov.nl.ca. For more direction on the regulatory review process, refer to Section 1 of the *Guidelines for the Design, Construction and Operation of Water and Sewerage Systems*, and substitute Service NL for references to DOEC.

A. General

As required under Sections 36, 37 and/or 48 of the *Water Resources Act*, SNL 2002, cW-4.01, the undersigned as owner or agent do hereby apply for your permission for the construction and installation of:

1. Sewage Treatment System for glove manufacturing facility
2. Name & address of proponent (**owner**) including contact person: Etyek/Superior Glove
36 Vimy Street, Acton ON L7J 1S1
3. **Email address of proponent:** (owner) _____
4. Location of project: Springdale, NL
5. Project description: Advanced Enviro-Septic System
6. Predesign report: Year: _____ Author: _____
7. Total service population: To date: 0 This project: _____ Future: _____
8. Status of units for servicing:

	Type	No. to date	This project	Future
	House	_____	_____	_____
	School	_____	_____	_____
	Medical Institution	_____	_____	_____
	Industrial	_____	_____	_____
	Other (specify)	_____	_____	_____
- Number of units for water service only: _____ Sanitary survey conducted: N/A
9. Permit Fee Submitted: \$ _____ Cheque: # _____
10. Date: _____ Signature: _____
(If signed by an agent, attach written authorization duly executed by owner)
11. **Email address of Engineering Consultant:** (agent) hubert.alacoque@iddel.ca

B. Water System

12. Details of Water Source and Distribution System

Source: _____

Available yield: _____ (m^3/day) Source Reservoir Storage: _____ (m^3)

Type: (gravity or pumped) _____

Bacteriological condition of source: _____ Testing results submitted: _____

Chemical/physical water quality of source: _____ Testing results submitted: _____

Treatment proposed: _____ (Complete Section 13)

Type of disinfection proposed: _____ Contact time provided: _____ (min.)

Future flows: estimated _____ (m^3/day) Present demand: estimated or metered (circle) _____ (m^3/day)

Distribution system storage proposed: (type) _____ Volume: _____ (m^3)

Location of tank: (Lat/Long) _____

Tank dimensions: (w/l/h, h/d) _____ Tank Fill Rate: _____ (L/s)

Tank foundation elevation: (m) _____ Max tank water level: (m) _____ Min tank water level: (m) _____

Expected tank residence time: _____ Tank mixing system: _____ Chlorination booster: _____

Estimated line pressure: _____ (kPa) Fire flows proposed: _____ Hydrants for this project: _____

Noted problems: _____

13. Water Treatment Plants:

Treatment Objective: Treat domestic/residential sewage strength

Treatment process proposed: (e.g. conventional, membrane, etc.) Septic tank + Advanced Enviro-Septic

Plant capacity: _____ (m^3/day) Maximum daily demand: _____ (m^3) Design period: _____ (yrs) Storage: _____ (m^3)

Pretreatment: _____

Process description: Secondary treatment through an Advanced Enviro-Septic system to ground infiltration.

Treatment level to a B-III level (< 15mg/l TSS; < 15 mg/l BOD5; <200 CFU/100ml of fecal coliform)

Disinfection: Chlorination UV Other _____

Corrosion control proposed: Soda ash Lime Soda ash/lime combination Other: _____

Estimated sludge production: _____ (m^3/year) Sludge disposal: _____

Testing facilities at plant: _____ Sanitary facilities: _____

Backflow prevention device(s) proposed: _____

Comments/other details: _____

C. Wastewater System

14. Sanitary Sewers:

Sewage characteristics:	Domestic	Schools	Institutional	Industrial	Other
% of total	_____	_____	_____	_____	_____
BOD ₅ (mg/l)	_____	_____	_____	_____	_____
TSS (mg/l)	_____	_____	_____	_____	_____

Technical study completed: (if yes, study name and date) _____

Proposed sewer flows: _____ (l/s) Capacity of receiving sewer: _____ (l/s) Condition of receiving sewer: _____

Storm water problems: _____

Location of new outfall: (Lat/Long) _____

Length of outfall from last manhole: _____ (m) Depth of water cover over outfall pipe at LNT: _____ (m)

Serviced area: _____ (Ha) Total flow: _____ (m³/day)

Outfall area description: (pond/river/harbour/ocean, dispersion, dilution, tidal action, prevailing winds, etc.)

Dispersion, infiltration into the ground of fully treated effluent.

Existing or potential problems: (shoreline impacts, fisheries impacts, damaged outfall, etc.)

15. **Sewage Lift Stations** Number: _____ Type: (wet/dry/suction lift) _____

Capacity of each: (l/s) _____ Estimated load on each: (l/s) _____

Location of new or upgraded lift station: (Lat/Long) _____

Is there an overflow on the new or upgraded lift station: (yes/no) _____

Provisions for electrical/mechanical failure: _____

16. **Wastewater Treatment Plants:**

Treatment process proposed: (e.g. activated sludge, fixed film, etc.) Septic

Plant capacity: Hydraulic: _____ (m³/day) Organic BOD₅: _____ (kg/day) TSS: _____ (kg/day)

Plant loading: Hydraulic: Average: _____ (m³/day) Peak: _____ (m³/day)

Organic: _____ (kg/day BOD₅) Industrial loading: _____ (kg/day BOD₅) TSS: _____ (kg/day)

Included components:

Pre/Primary: Bar screen Grit chamber Comminutor Microscreening Primary clarifier

Secondary: Extended aeration Contact stabilization Sequencing batch reactor Aerated lagoon

Wetland Rotating biological contactor Other: Advanced Enviro-Septic

Disinfection: Chlorination/dechlorination UV Other: _____

Estimated sludge production: _____ (m³/year) Sludge digestion: Aerobic Anaerobic None

Sludge disposal: _____

Provision for winter operation: (enclosure, etc.) _____

Testing facilities at plant: _____ Sanitary facilities: _____

Potable water provided: Yes No If yes, backflow prevention device(s) proposed: _____

Proximity to residential/recreational areas: _____

Discharge location & area description: (pond/river/harbour/ocean, dispersion, dilution, tidal action, prevailing winds, etc.)

Existing and potential problems: (shoreline impacts, fisheries impacts, damaged outfall, etc.)

D. Alterations to a Water Body

17. Pipelines Crossing Streams

Included on drawings: General site plan Cross-sectional plan Profile

Location: (Lat/Long) _____

Channel slope: _____ Depth below stream bed: _____ (m)

Physical description of stream bottom:

Material type: Clay Sand Gravel Cobble Boulder

Presence of vegetation: None Sparse Moderate Heavy

Particle size: _____ (mm) Depth to bedrock: _____ (m) Manning's n: _____

Hydraulic description:

Minimum flow: _____ (m³/s) Minimum velocity: _____ (m/s)

Maximum flow: _____ (m³/s) Maximum velocity: _____ (m/s)

Construction Details: (include method of dewatering, diversion, etc.)

If additional details are needed on the required information, please contact
Mount Pearl: Design Approval Engineer at (709) 729-5537, by email thomasjardine@gov.nl.ca or
Corner Brook: Design Approval Technician II at (709) 637-2671, by email KimberlyHalfyard@gov.nl.ca