



CULTEC Recharger 902HD Stormwater System Calculations

Consulting Engineer:

Great Basin Engineering

Project Information:

GVH Distribution
South Ogden, UT
Ret. Pond 1

Calculations Performed By:

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Date:

12/28/20

Project Number:

20-4173.00

System Information

Proposed bed layout of

3 Rows

23 No. of Units per Row

Given:

Storage required	7000	CF	m ³
No. 4800 Fabric For Internal/External Manifolds	32	feet	
Number of Inlet/Outlet Pipes	0		
Stone Base	9	inches	229 mm
Stone Above	12	inches	305 mm
Chamber Spacing	9	inches	229 mm
No. of HVLV FC-48 Feed Connectors	4	units	
No. CULTEC Inspection Ports	1	units	
Stone Porosity	40	%	
Stone Border Width	1	feet	0.305 m

- Discount stone base from total storage provided (If Applicable)
- Discount stone above from total storage provided (If Applicable)

Other Parameters:

Length of Separator Row

88 feet

26.822 m

Type of Lining

None

0.000 m

Sand Filter Depth (If Applicable)

Sloped Sides (1:1) (If Applicable)

Maximum Finished Grade Elevation:
Minimum Finished Grade Elevation (Unpaved):
Minimum Finished Grade Elevation (Base of Flexible Pavement):
Minimum Finished Grade Elevation (Top of Rigid Pavement):
Top of Stone Elevation:
Top of Chamber Elevation:
Bottom of Chamber Elevation:
Bottom of Stone Elevation:

Assumptions

Model Name		Chamber Height	Design Unit Height	Chamber Width	Chamber Spacing	Design Unit Width	Chamber Volume per Linear Foot	Design Unit Volume	Installed Chamber Length
		inches mm	feet m	inches mm	inches mm	feet m	cu. ft/ft cu. m/m	cu. ft/ft cu. m/m	feet m
Recharger® 902HD Chamber	English	48	5.750	78	9	7.25	17.31	27.061	3.667
	Metric	1219	1.753	1981	229	2.21	1.608	2.514	1.118
Recharger® 902HD End Cap	English	48.5	5.750	78	9	7.25	5.509	19.980	0.501
	Metric	1232	1.753	1981	229	2.21	0.512	1.856	0.153
HVLV™ FC-48 Feed Connectors	English	12	n/a	16	n/a	n/a	0.913	n/a	0.750
	Metric	305	n/a	406	n/a	n/a	0.085	n/a	0.229

Storage Provided within CULTEC Recharger 902HD Stormwater Chamber, End Caps and HVLV FC-48 Feed Connector Internal Manifold System - not including stone

Number of Recharger 902HD chambers by design	=	69 pcs
69 pcs x 3.667	=	253.00 feet
Number of Recharger 902HD end caps	=	6 pcs
6 pcs x 0.501	=	3.01 feet
Number of HVLV FC-48 Feed Connectors	=	4 pcs
4 pcs x 0.750	=	3.00 feet
Total footage of Recharger 902HD chambers	=	253.00 feet
Total footage of Recharger 902HD end caps	=	3.01 feet
Total footage of HVLV FC-48 Feed Connectors	=	3.00 feet
Storage provided within Recharger 902HD chambers	=	4379.47 CF
Storage provided within Recharger 902HD end caps	=	16.56 CF
Storage provided within HVLV FC-48 Feed Connectors	=	2.74 CF
Total Storage within Recharger 902HD chambers and feed connectors	=	4398.77 CF

Storage Provided within Entire CULTEC Stormwater System - including stone

Bed width	23.00 feet	7.01 m
Bed length	87.34 feet	26.62 m
Bed Depth	5.75 feet	1.75 m
Total Area	2008.73 sq. ft.	186.61 m ²
Volume of Effective Excavation (not including additional cover)	11550.20 CF	327.10 m ³
Perimeter of Bed	220.67 feet	67.26 m
Total Storage within chambers, end caps and feed connectors	4398.77 CF	124.57 m ³
Total Stone Required	7151.43 CF	202.53 m ³
	265 CY	
	371 tons	
Storage provided within stone	2860.57 CF	81.01 m ³
Total Storage within CULTEC Stormwater System	=	7260 CF

Req. storage attained.

CULTEC MATERIALS LIST

Model	Model #	Quantity	Unit of Measure	Quantity	Unit of Measure
Recharger 902HD Heavy Duty Chamber	902HD	69	pcs		
Recharger 902HD End Cap	902HD EC	6	pcs		
HVLV FC-48 Feed Connectors	FC-48	4	pcs		
CULTEC No. 410 Non-Woven Geotextile	NWG410	863	Sq. Yards	721	m ²
CULTEC No. 4800 Woven Geotextile 7.5' x 100' (2.29 m x 30.48 m)	75WG4800	132	feet	40	m
CULTEC Inspection Port Kit	INSP KIT 126	1	pcs		
Total Stone		265	cubic yards	203	cubic meters

DISCLAIMER: If this is a value-engineered project based on a competitor's design.

The following inputs and calculations are based upon limited design information provided to CULTEC by a third-party. An engineer should review the inputs to confirm accuracy of the assumptions.

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CULTEC Recharger 902HD Stormwater System Calculations

Consulting Engineer:

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Project Information:

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Ret. Pond 2

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Date:

12/28/20

Project Number:

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System Information

Proposed bed layout of

Rows

No. of Units per Row

Given:

Storage required	9500	CF	m ³
No. 4800 Fabric For Internal/External Manifolds	32	feet	
Number of Inlet/Outlet Pipes	0		
Stone Base	9	inches	229 mm
Stone Above	12	inches	305 mm
Chamber Spacing	9	inches	229 mm
No. of HVLV FC-48 Feed Connectors	4	units	
No. CULTEC Inspection Ports	1	units	
Stone Porosity	40	%	
Stone Border Width	1.25	feet	0.381 m

- Discout stone base from total storage provided (If Applicable)
- Discout stone above from total storage provided (If Applicable)

Other Parameters:

Length of Separator Row	113	feet	34.442 m
Type of Lining	None		
<input type="checkbox"/> Sand Filter Depth (If Applicable)		feet	0.000 m
<input type="checkbox"/> Sloped Sides (1:1) (If Applicable)			

Maximum Finished Grade Elevation:
Minimum Finished Grade Elevation (Unpaved):
Minimum Finished Grade Elevation (Base of Flexible Pavement):
Minimum Finished Grade Elevation (Top of Rigid Pavement):
Top of Stone Elevation:
Top of Chamber Elevation:
Bottom of Chamber Elevation:
Bottom of Stone Elevation:

Assumptions

Model Name		Chamber Height	Design Unit Height	Chamber Width	Chamber Spacing	Design Unit Width	Chamber Volume per Linear Foot	Design Unit Volume	Installed Chamber Length
		inches mm	feet m	inches mm	inches mm	feet m	cu. ft/ft cu. m/m	cu. ft/ft cu. m/m	feet m
Recharger® 902HD Chamber	English	48	5.750	78	9	7.25	17.31	27.061	3.667
	Metric	1219	1.753	1981	229	2.21	1.608	2.514	1.118
Recharger® 902HD End Cap	English	48.5	5.750	78	9	7.25	5.509	19.980	0.501
	Metric	1232	1.753	1981	229	2.21	0.512	1.856	0.153
HVLV™ FC-48 Feed Connectors	English	12	n/a	16	n/a	n/a	0.913	n/a	0.750
	Metric	305	n/a	406	n/a	n/a	0.085	n/a	0.229

Storage Provided within CULTEC Recharger 902HD Stormwater Chamber, End Caps and HVLV FC-48 Feed Connector Internal Manifold System - not including stone

Number of Recharger 902HD chambers by design	=	90 pcs
Number of Recharger 902HD end caps	=	6 pcs
Number of HVLV FC-48 Feed Connectors	=	4 pcs
Total footage of Recharger 902HD chambers	=	330.00 feet
Total footage of Recharger 902HD end caps	=	3.01 feet
Total footage of HVLV FC-48 Feed Connectors	=	3.00 feet
Storage provided within Recharger 902HD chambers	=	5712.35 CF
Storage provided within Recharger 902HD end caps	=	16.56 CF
Storage provided within HVLV FC-48 Feed Connectors	=	2.74 CF
Total Storage within Recharger 902HD chambers and feed connectors	=	5731.65 CF

Storage Provided within Entire CULTEC Stormwater System - including stone

Bed width	23.50 feet	7.16 m
Bed length	113.50 feet	34.60 m
Bed Depth	5.75 feet	1.75 m
Total Area	2667.32 sq. ft.	247.79 m ²
Volume of Effective Excavation (not including additional cover)	15337.09 CF	434.35 m ³
Perimeter of Bed	274.01 feet	83.52 m
Total Storage within chambers, end caps and feed connectors	5731.65 CF	162.32 m ³
Total Stone Required	9605.44 CF	272.03 m ³
	356 CY	
	498 tons	
Storage provided within stone	3842.18 CF	108.81 m ³
Total Storage within CULTEC Stormwater System	=	9574 CF

Req. storage attained.

CULTEC MATERIALS LIST

Model	Model #	Quantity	Unit of Measure	Quantity	Unit of Measure
Recharger 902HD Heavy Duty Chamber	902HD	90	pcs		
Recharger 902HD End Cap	902HD EC	6	pcs		
HVLV FC-48 Feed Connectors	FC-48	4	pcs		
CULTEC No. 410 Non-Woven Geotextile	NWG410	1125	Sq. Yards	940	m ²
CULTEC No. 4800 Woven Geotextile 7.5' x 100' (2.29 m x 30.48 m)	75WG4800	160	feet	49	m
CULTEC Inspection Port Kit	INSP KIT 126	1	pcs		
Total Stone		356	cubic yards	272	cubic meters

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