

NR-Clarifiers

Conventional Gravity/Solid Contact Clarifiers



▲ **NR- Conventional Clarifier –**
Belize City WTP
Belize, Central America
Design Flow: 14,000 – 20,000 m³ per day

▶ **NR-Conventional Clarifier –**
Greenstone WWTP
Geraldton, Ontario, Canada
Design Flow: 2500 m³ per day



Napier-Reid's clarifiers are custom engineered in order to provide an effective water/wastewater sedimentation.

N-R Clarifiers



NR- Conventional Clarifier

Lambton WTP
 Sarnia, Ontario, Canada
 Design Flow: 461m³ per day



NR- Conventional Clarifier

Ault Foods
 Winchester, Ontario, Canada
 Design Flow: 1645m³ per day



NR-Conventional Clarifier

Smooth Rock Falls, Ontario
 Design Flow: 1637m³ per day



NR-Solid Contact Clarifier

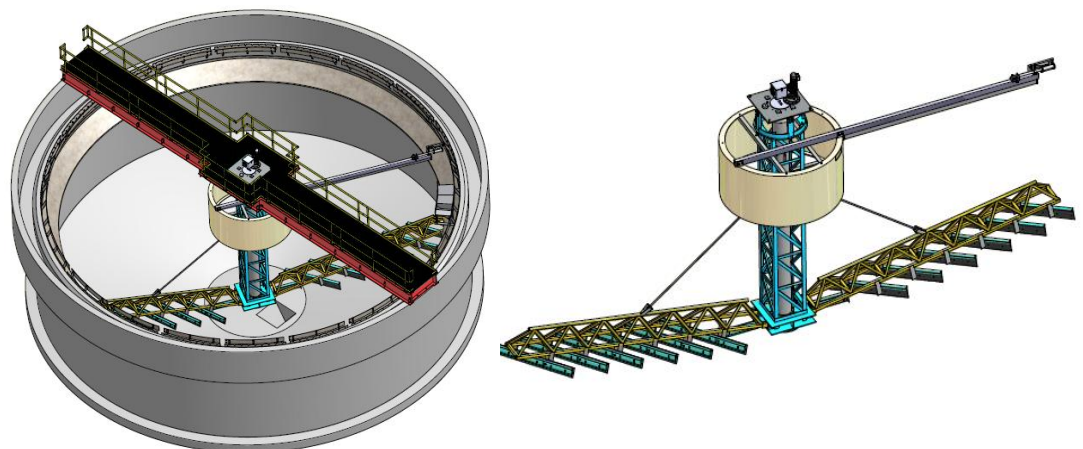
La Mesa, New Mexico, USA
 Design Flow: 1632m³ per day

**Napier-Reid Centre
 Pier Circular Clarifier**

Napier-Reid's clarifiers provide a size and type to fit any plant requirement. The application-oriented design assures an economical performance for municipal or industrial water and wastewater treatment. Sedimentation tanks or conventional gravity clarifiers are used in water and wastewater treatment as a physical unit operation through gravity for solid-liquid separation of readily settle able solids. The functions can be further enhanced using a solid contact clarifier which combines mixing, flocculation and clarification in a single tank.

Conventional circular clarifiers are commonly used in municipal wastewater treatment in order to reduce BOD and suspended solids content from the wastewater prior to the main biological treatment. Typically, a well designed primary clarifier should be able to remove up to 30% of the BOD from municipal wastewater with an HRT of 30 min and a BOD concentration of 200-300 mg/L. Secondary clarification is the final process for generating a good quality effluent in numerous activated sludge processes. An adequate surface loading rate is commonly used in order to determine the clarifier area.

Circular gravity clarifiers typically have a radial flow inlet pipe that feeds into a stilling well which reduces the influent velocity and redirects it downward in order to generate an uniform flow and prevent short circuiting. A central-driven dual arm sludge collector mechanism rotates continuously over a gently sloped bottom in order to collect sludge which later falls by gravity into a steep sludge hopper. The effluent overflows through adjustable v-notched weir plates. An optional scum baffle prevents scum from flowing into the effluent channel. A skimmer mechanism can be provided for scum removal. Solid contact clarifiers come with a central draft tube and solid contact chamber and a recirculation pump in order to provide the required up flow rate to the previously coagulated influent.



Clarifier Components

▶ DRIVE UNIT



- ▶ NEMA Design B motor, totally enclosed with Class B insulation.
- ▶ Robust in design and built with high quality components.
- ▶ Custom sized in order to handle the specific requirements of the application.
- ▶ Overload and current protection system included.

Full Bridge Clarifier Mechanism

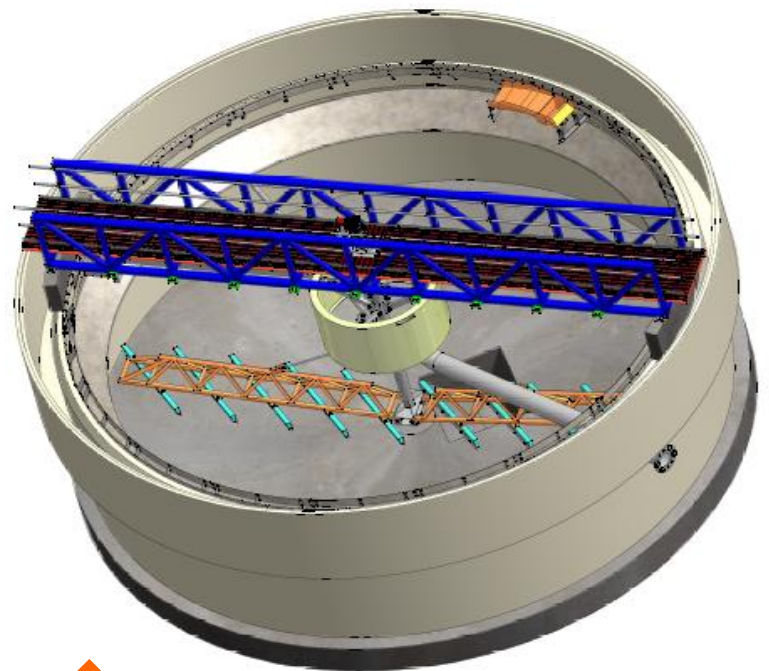
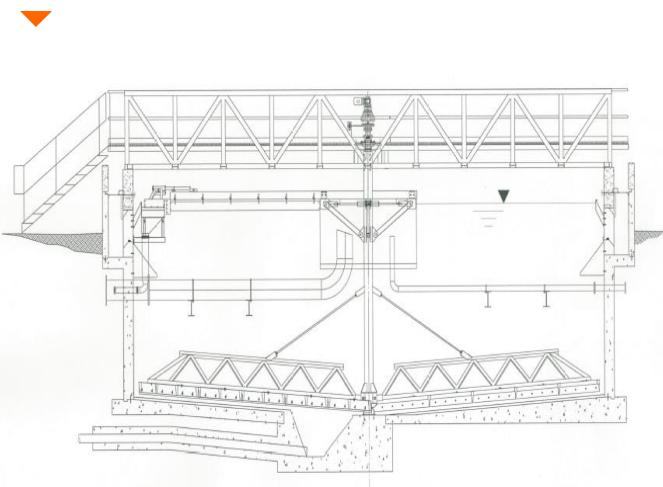


▶ SLUDGE COLLECTOR MECHANISM



- ▶ Stainless steel or epoxy-coated steel construction for good corrosion resistance.
- ▶ Adjustable UHMWPE squeegee plates properly designed for good scraping action.
- ▶ All structural steel welding procedures in accordance with the requirements of the CWB- W59 "Welding of Steel Structures"
- ▶ Arms fabricated from structural angles with a minimum thickness of 6 mm for good mechanical integrity.

Napier-Reid Simplified Section Drawing of a Full Bridge Circular Clarifier.



Birds View of Napier-Reid Full Bridge Circular Clarifier

Advantages of Napier-Reid's Clarifiers

- Custom designed/fabricated in order to meet the specific requirements.
- Outstanding hydraulic design prevents short circuits, provides a low scour velocity and provides the required effluent quality.
- Excellent structural design guarantees years of trouble-free operation.
- Low Operation and Maintenance cost.

Clarifiers – Recent Installation List

OWNER	CONSULTING ENGINEER	LOCATION	START-UP DATE	FLOW	Dia.
Reg. Mun. Waterloo	Stanley Assoc.	Wellesley, ON	1993	500 m ³ /day	9.0 m
Ault Foods	M.S. Thompson	Winchester, ON	1996	1645 m ³ /day	16.5 m
G.E. Plastics	Napier-Reid	Coburg, ON	1999	922 m ³ /day	10.7 m
Water & Sewage Authority	MMM	Belize City, Belize Central America	2001	18720 m ³ /day	16 m
Lambton WTP	RVA	Sarnia, ON	2003	461 m ³ /day	5.8 m
Smooth Rock Falls, ON	Macviro	Smooth Rock Falls, ON	2006	1637 m ³ /day	13.2 m
Geraldton, ON	MMM	Geraldton, ON	2007	2500 m ³ /day	12.6 m
Eco-Tec	Napier-Reid	La Mesa, NM USA	2007	1632 m ³ /day	8.3 m
Marmora	Greer Galloway	Marmora, ON	N/A	1389 m ³ /day	13.66 m

About Napier - Reid

Over 60 years of excellence in water & wastewater treatment

Napier-Reid is located in the greater Toronto area in the Province of Ontario, Canada. We supply engineering services and process equipment for water and wastewater treatment.

We have the technology, resources and experience to design, manufacture and implement innovative water and wastewater treatment solutions worldwide. We have completed over 3000 projects since our inception in 1950. This stands as a testament of our ongoing commitment of providing the highest quality service, products and after sales support in the industry. Our capabilities include engineering, manufacturing, installation and field support. We have in-house personnel for complete mechanical, electrical and instrumentation process and control system design. As a manufacturer, our designs focus on cost-effective solutions, simplicity of installation and ease of maintenance.

Napier-Reid has developed an excellent team with many of years of experience. We have a well-deserved reputation for innovation, service and integrity. A significant portion of Napier-Reid's revenue comes from export to areas such as the Caribbean, Central America, South America, Middle East, Eastern Europe, Africa, and Asia. Some of these projects are financed by Canadian government or International financing institutes. As a Canadian manufacturer, we are eligible for Canadian governmental funding and EDC export credit. We have the capability to handle a large range of projects, from engineering, equipment supply, installation, start-up, to turnkey projects. Let Napier-Reid be your solution for water and wastewater treatment.



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