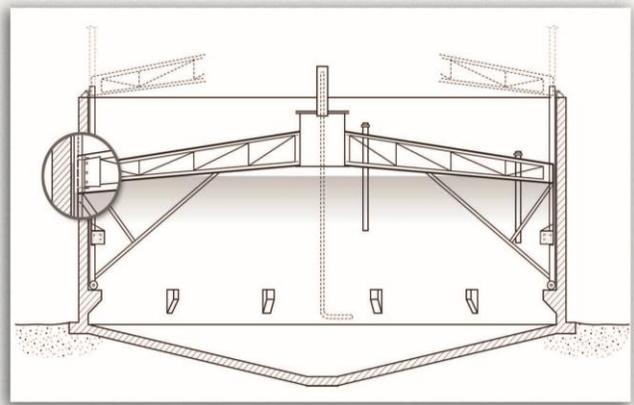


TRUSS COVER DESIGN vs. RADIAL BEAM COVER DESIGN

Ovivo digester covers are based on the shell design. The beams are necessary for erection only and are not used in the structural calculations. Theoretically, the beams could be removed after the cover has been erected. The beams and members for the beam and truss designs are used in the structural calculations and must be left in place after erection. The key difference for Contractors is there are fewer members to handle and weld, significantly decreasing the installation time of the covers and making the shell design the most economical design from which to choose.

On a truss & beam design, the fabricator will have to cut and weld more parts to create the truss beam. In addition, the trusses will ship individually to the jobsite. The shipment will include the trusses and the cover plates and side sheets for the cover. The contractor will have to layout the trusses and weld the cover plates to the trusses and then weld the side sheet to the cover and trusses. This will require more welding on the contractor's side. On a radial beam design, Ovivo uses the EZ-RECT™ erection system, which is described below and reduces the contractor's welding.

Main Rafters	Radial Truss design produces maximum structural integrity with sufficient depth to provide an attic space for inspection and protection of the trusses.
Gas Dome	Provides the structural connection for the radial trusses. Includes a top plate for mounting gas lines. Pressure/Vacuum Relief valve and other accessories.
Rim Plate	Minimum ¼ inch steel plate with depth to provide desired gas storage volume at constant pressure.
Purlins	Structural members connected between main rafters to provide lateral bracing, rigidity and support for the roof plates, minimum ¼ inch thick.
Roof Plates and Ceiling Plates	Minimum ¼ inch thick plate field welded to the main truss structure. The dual deck design provides an accessible weather protected attic for the addition of insulating material to be placed on the ceiling plates.



Once the truss cover has been welded together by the contractor, the next step is sandblast and paint. Because of the complex nature of the truss design and the angles and spacing's, the sandblasting and painting of the interior surface of the truss cover will require more time and material for proper coverage. This will be at the contractor's expense. In comparison, the radial beam design is smoother both on the interior and exterior and the sandblast and paint is a simple process. This reduces the complete assembly and installation cost.

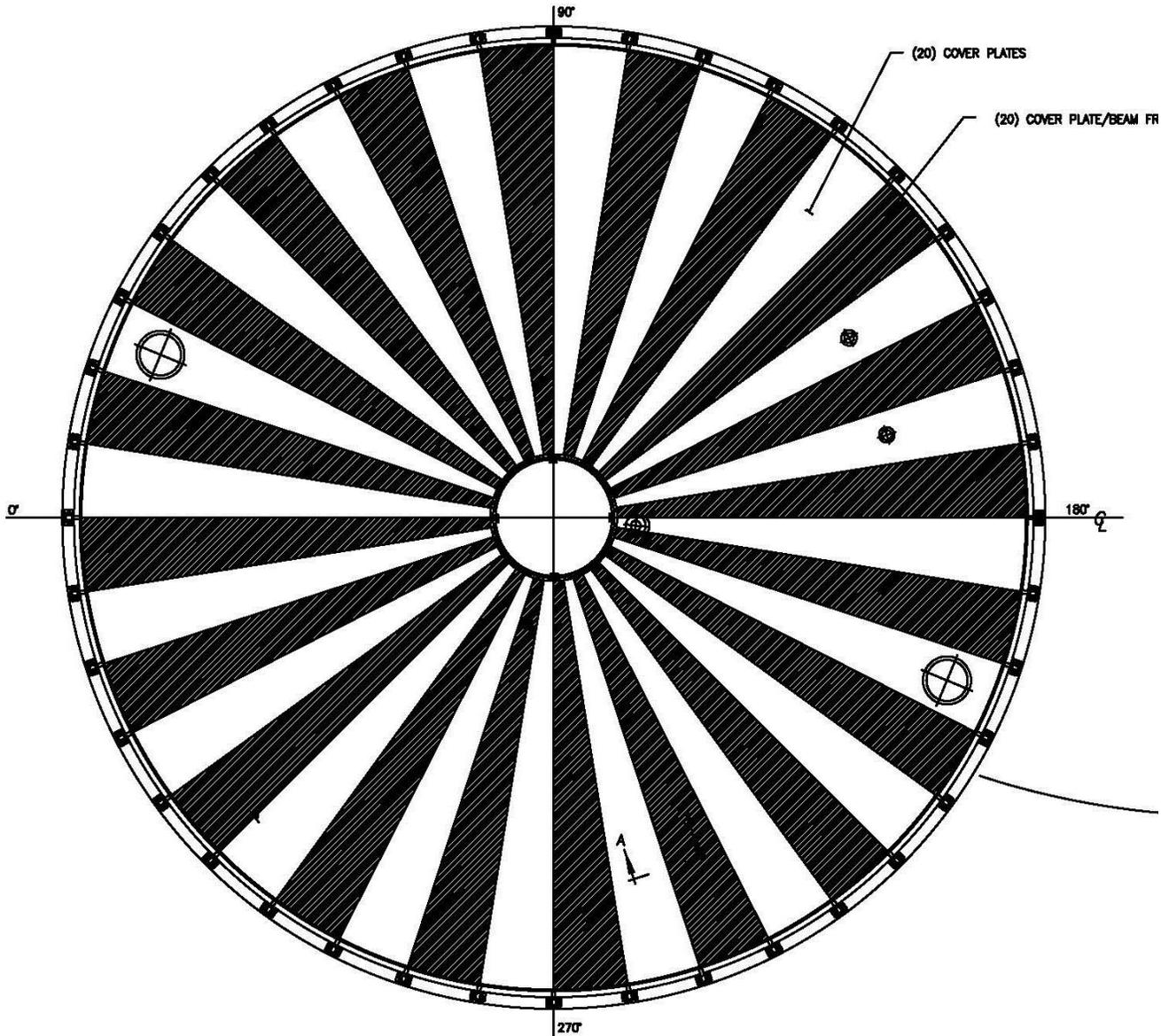
In conclusion, a truss cover will require more work from the fabricator and more work from the contractor. In terms of cost per lb. the truss cover will be comparable to the radial beam design. It will be in the overall installed cost that the truss cover will cost more.

For radial beam covers, fabrication is easier and installation is easier. The fabricator will have beams that are cut to length based on the radius of the cover and these will be used to weld the cover plate on. Then the cover will be partially built as described below as an EZ-RECT™ system design. Once the radial beam cover is on site, the contractor will have only a partial assembly to make. Then the sandblast and paint will be simple because there are only smooth surfaces to blast and paint.



EZ-RECT™

The EZ-RECT™ erection system is another option available on Ovivo' digester covers that is particularly important when there is an accelerated schedule for installation of the covers such as replacing covers on existing tanks. The EZ-Rect system consists of pre-fabricating assemblies to minimize field welding of the cover and the use of removable bolted connections that results in an easier fit up and assembly of all the cover members. This facilitates the installation of a cover and substantially lessens the set up and erection time. Typically the erection time can be reduced 25-50% depending on the size of the cover and the experience of the Contractor's crew. The purchase of this option will reduce the amount of field welding on the 45 ft diameter gas holder cover by approximately 270 linear feet. Again, this is a system that is not offered by all manufacturers. The EZ-Rect option proposed is the construction in the shop of panels for ease of erection of the digester cover in the field. Each panel will consist of two (2) beams and one (1) cover plate.



PLAN

The shaded areas show the cover plates and beams that are pre-assembled and shipped to site. Once on site the pre-assembled sections are laid out and the plates are welded to the sections. This reduces the on-site welding and reduces the assembly time. Once the cover is fully assembled, the sandblast and painting time proceed quickly and smoothly because of the simplicity of the construction of a radial beam cover.