INTERNESTED ELLIPTICAL MANHOLE SECTIONS WITH SUB CONDUITS AND AN AUXILIARY CONDUIT

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This invention relates to improvements in manhole construction for sewers, water conduits and the like of the class wherein a plurality of component sections are pre-formed and adapted to be assembled in previously formed excavations.

It is a particular object of the present invention to provide sections of the class aforesaid which can be quickly assembled in a secure manner in the manhole excavation in a manner whereby interiorly contained components, such as auxiliary parallel conduit in accordance with the present invention, or ladder components as in my Patent No. 2,965,195, may be quickly and positively aligned into continuous units.

It is a further object of the present invention to provide pre-formed manhole sections adapted for vertical alignment which are of cross section adapted to give enhanced strength with maximum maneuverability and economy of space, this I accomplish by forming said sections of elliptical cross-sectional tubular contour.

By providing the aforesaid pre-formed sections of elliptical contour and with the upper edge of one section adapted to nest within a complementary seat in the lower edge of an adjacent section, it will be apparent that one section cannot be circumferentially displaced with respect to another. Thus alignment of the sections and their aforesaid internally disposed elements is assured and makes their use extremely feasible and useful.

Also, by providing the aforesaid pre-formed sections with an elliptical contour the aforesaid auxiliary internally disposed components may be disposed in the most secure areas, namely adjacent one or both of the vertices of the ellipse.

Other objects of the present invention, its details of construction, arrangement of parts and the economies thereof will be apparent from a consideration of the following specification and accompanying drawings, wherein:

FIG. 1 is a top plan view of an assembled manhole of elliptical transverse contour composed of a plurality of sections formed in accordance with the present invention.

FIG. 2 is a fragmentary vertical sectional view thereof taken on the line 2—2 of FIG. 1.

FIG. 3 is a fragmentary section taken on the line 3—3 of FIG. 2.

FIGS. 4, 5 and 6 are vertical sectional views of the pre-formed top, one intermediate, and base manhole sections respectively, such as shown in FIG. 2 but in individual separated condition.

FIGS. 7, 8 and 9 are top plan views of the sections of FIGS. 4, 5 and 6 respectively.

FIG. 10 is a fragmentary vertical sectional view of an assembly similar to that of FIG. 2 but of modified construction.

Referring to the drawings, the reference numeral 10 indicates a pre-formed manhole top section of elliptical contour which is preferably formed of pre-cast concrete but may be composed of molded clay tile or other known structural composition conventionally employed in the production of pre-cast or pre-formed manhole sections which are adapted to be assembled by articulation in an excavation. This manhole section is formed with an inwardly offset tapered edge portion 11 adapted to be received in a complementary and pre-formed edge portion 12 in the edge of a similarly shaped component such as is provided at 12 at its lower defining edge. Each of the pre-formed components of the manhole are similarly provided with an inwardly offset tapered projection 11 at their upper edge and a tapered seat 12 formed within their lower edge portion.

Thus, the intermediate section 13 likewise is provided with an inwardly offset tapered upper edge projection 11 and the edge fits within the tapered seat at the lower edge of section 10 or of any interposed intermediate section 13, it being understood that any number of intermediate sections 13 may be employed depending on the depth of the manhole.

The base section 14 likewise has a tapered upper edge projection 11 adapted to seat in the tapered groove in the lower edge of the intermediate section 13, or if no intermediate sections 13 are employed, base section 14 can be directly joined to the top section 10, all of the sections 10, 13 and 14 being of the same elliptical shape and dimension so that the sections shown in FIGS. 4, 5 and 6 can be joined together in a unit as shown in FIG. 2 suitably by the interposition of suitable cementitious material such as Portland cement, or a mastic comprising asphaltic materials, so as to provide a good joint between a tapered projection 11 and a complementary seat 12.

Although section 10 has been designated as the top section, if desired, it may comprise an intermediate unit and have a section 13 disposed above it.

Each of the sections 10, 13 and 14 suitably carry an internally disposed sectional ladder generally designated as 15 having upper hooked ends 16 which seat within upper edgegewise opening slots 17 in the wall of a unit 10, 13 or 14, with the lower end 18 of the ladder unit 15 extending normally to the ladder and below the edge of the units 10 and 13 to which it is secured, so that the portion 18 of one section may be received in the upper edge of the slot 17 of another section and abut against and adjacent top end 16 of the ladder component in a joined manhole section so as to form a continuous ladder therein, as described and claimed in my Patent 2,965,195. In accordance with the present invention, however, I dispose these ladder sections 15 adjacent one of the vertices of the ellipse.

The ladder section 15 in the base section 14 does not necessarily terminate in a bottom component 18, but rather terminates vertically within the bottom or base closure section 19 which may be suitably formed of Portland cement or a concrete mixture composed of cement and gravel aggregate. This pre-formed manhole section 14 is further provided with a pair of integrally formed laterally extending stub conduits 20 and 21 extending in opposite directions and having their axes aligned with the minor axis or short diameter of the elliptical section 14, these stubs 20 and 21 providing conduits for connection to a main sewer line. The stub conduit 20 is suitably formed with a tapered seat in its edge as at 22 similar to the tapered seats 12, and stub conduit 21 is formed with an inwardly offset outwardly extending tapered edge portion 23 similar to the portions 11 to permit pre-formed sewer pipe lengths to be connected in the manner described with reference to sections 10, 13 and 14.

In accordance with one form of the present invention, the sections 10, 13 and 14 are further provided with sections of inwardly disposed longitudinally extending conduits 24, which may be composed of molded clay tile or metal, suitably interlocked in place adjacent the other one of the vertices of the elliptical manhole sections and opposite to the ladder sections 15. These conduit sections 24 are suitably embedded and fixed in place by means of reinforced concrete as at 25. In the intermediate section 13 the conduit 24 extends as shown in FIG. 5. In the upper section 10 the conduit 24 connects with the laterally and outwardly extending conduit
section 26, the conduit 26 opening if desired not only into the vertical conduit section 24 but also into the interior of the section 10, as shown at 27. The conduit 24 in the base section 14 suitably terminates in an integral \( L \) or bend 28 opening into the interior of section 14 and in the area where it is intersected by the stub conduits 20, 21.

It will thus be seen that sections 10, 13 and 14 may be continually and quickly joined together in a secure and positively aligned manner and the manhole built to desired length by employing as many intermediate sections 13 as is necessary. At the same time auxiliary equipment may be disposed within pre-formed units such as ladder components 15 or internal conduits 24 and these likewise aligned in continuous manner.

Although FIGS. 1 to 9 shows the conduit sections to have disposed within them both a ladder section 15 and a parallel conduit 24, in the modified form shown in FIG. 10 only the ladder 15 is disposed within the sections. Here the bottom section 14' may be provided with an aperture 29 in the wall thereof opposite the ladder 15 for interfitting of suitable conduit as required. In this case, one or more intermediate sections 13' may be joined together and vertically aligned with the base 14' in the manner described with respect to the form of FIGS. 1 to 9, it being understood that in the form of FIG. 10 the manhole sections are similarly pre-formed and of elliptical transverse section.

Although I have shown and described the preferred embodiments of my invention it will be understood by those skilled in the art that changes may be made in the details thereof without departing from its scope and comprehended by the following claims.

I claim:

1. A manhole base composed of an endwise closed tubular elliptical section and an opposed integral pair of laterally extending stub conduits, the axes of said conduits coinciding with the minor transverse axis of said elliptical base section, and a vertically extending conduit disposed within said section and secured adjacent one of the vertices thereof, the lower end of said conduit opening within said base section.

2. A manhole composed of a plurality of preformed edge-wise intermeshed vertically disposed and aligned sections of elliptical transverse contour, one of said sections forming a base closed at its lower end and including an opposed integral pair of laterally extending stub conduits, each of said sections carrying an aligned vertically extending conduit component disposed therein and secured adjacent one of the vertices of its elliptical section.

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