SKEW ARCHES: ADVANTAGES AND DISADVANTAGES OF DIFFERENT METHODS OF CONSTRUCTION

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Skew Arches: Advantages and Disadvantages of Different Methods of Construction by E. W. Hyde

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E. W. HYDE

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OF

DIFFERENT METHODS

OF CONSTRUCTION.

BY

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NEW YORK:

D. VAN NOSTRAND CO., PUBLISHERS,

23 MURRAY AND 27 WARREN STREETS.

1899.

PREFACE.

The author was led to make the investigations contained in this little treatise by a desire to satisfy his own mind as to the relative advantages of several different methods which have been employed in the construction of Skew Arches.

The two important points of comparison that naturally suggest themselves to the investigator are:

1st. Relative security;

2d. Relative facility of construction.

A discussion and comparison of three modes of construction, with special reference to these points, will be found in the following pages, together with brief descriptions of the manner of making the necessary draughts, patterns, templets, etc.

The paper first appeared in VAN NOSTRAND'S ENGINEERING MAGAZINE, for which it was written.

E. W. HYDE.

312266

PREFACE

TO SECOND EDITION.

As the demand for this little treatise had exhausted the first edition, a new one was plainly suggested.

Although strictly technical in its character, and belonging to the less frequented field of practical engineering, it manifestly supplied a want.

The present issue, except for a few typographical corrections is a literal reprint, of the first edition.

G. W. P.

Jan. 1900.

SKEW ARCHES.

I PROPOSE in this paper to discuss to some extent three methods which have been employed in the construction of oblique or skew arches, and to make a comparison of their relative security, facility of construction, etc.

The three methods will be designated as,

1st. The Helicoidal method.

2d. The Logarithmic method.

3d. The "Corne de Vache" or Cow's-horn method.

The first two names are derived from the nature of the coursing and heading, joint surfaces and their intersections with the soffit, and the third from the soffit itself, which is a warped surface that has been thus named. They will be considered in the order given above.

The following abbreviations will be used throughout the paper:

C j c, for coursing joint curve, or intersection of coursing joint with soffit.

H j c, for heading joint curve.

C j s, for coursing joint surface.

H j s, for heading joint surface.

H P, for the horizontal plane of projection.

V P, for the vertical plane of projection.

P F, for the plane of the face of the arch.

Ex. s, for the extradosal or outer surface of the arch.

THE HELICOIDAL METHOD.

In this method the C j s's and H j s's are both warped helicoids, and of course their intersections with the soffit helices.

Let C D D_2 C_2 be the projection of the soffit on the H P which coincides with the springing plane of the arch, and D′ V C_2 is a semicircle whose radius will be designated by r.