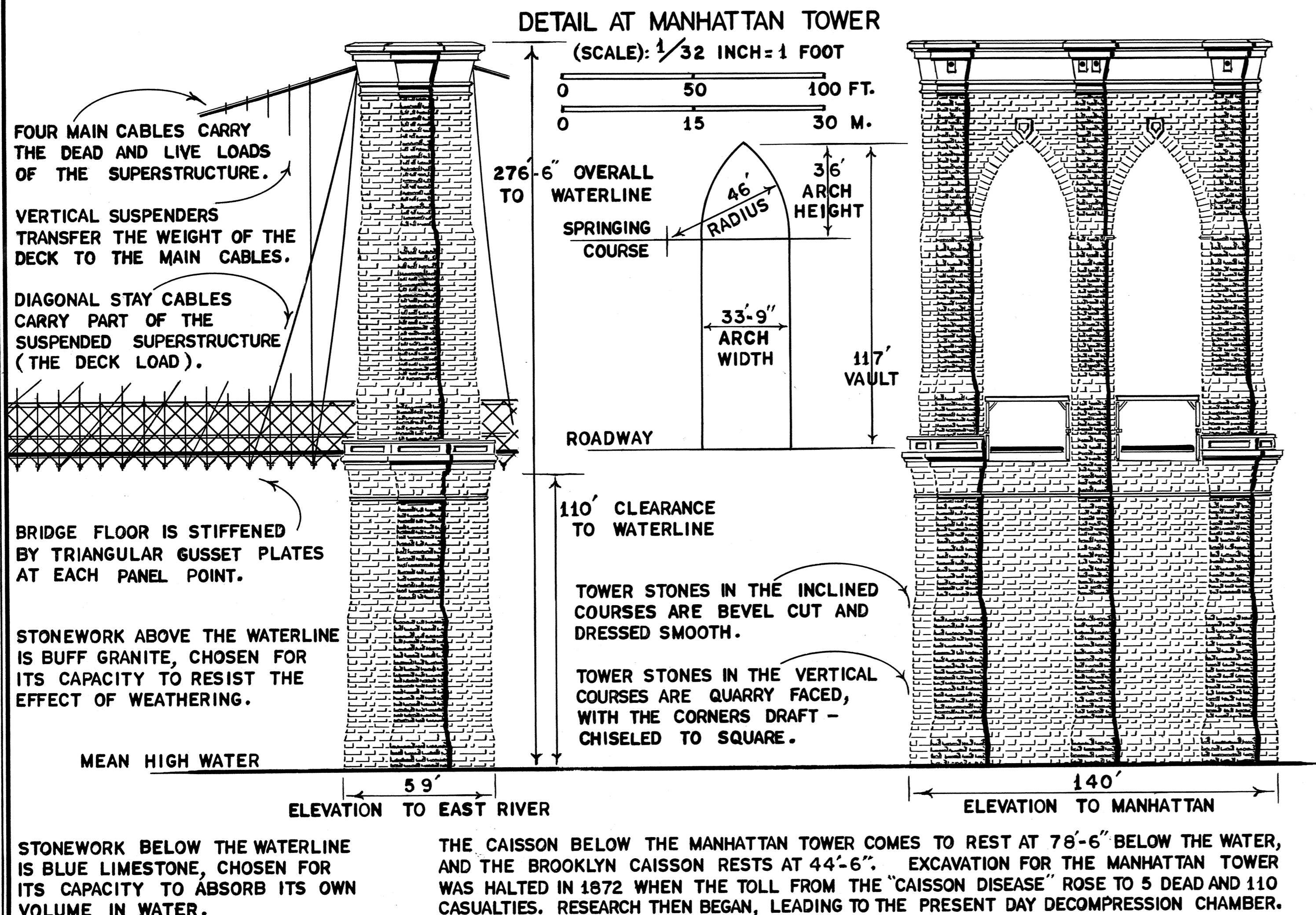


THE TERMINAL POINTS OF THE BROOKLYN BRIDGE OFFER A SHARP CONTRAST IN THEIR GROUND ELEVATIONS, WITH THE MANHATTAN TERMINUS HAVING A HEIGHT OF 36' ABOVE THE EAST RIVER, AND THE BROOKLYN TERMINUS SET AT 68' ABOVE THE WATER LINE. THE MANHATTAN APPROACH, REQUIRING A LONGER ROADWAY AND A GREATER INCLINE, HAS A GRADIENT OF 3'-3" PER HUNDRED FEET. THE BROOKLYN APPROACH REQUIRES A GRADIENT OF ONLY 1'-9" PER HUNDRED FEET.

THE EAST RIVER FORMS A TIDAL ESTUARY WHICH IS ACTED UPON, AT HIGH TIDE, BY THE INFLUX OF SEA WATER FROM LONG ISLAND SOUND, LYING TO THE NORTHEAST, AND BY THE INFLUX OF THE ATLANTIC, LYING TO THE SOUTHWEST. THE RESULT IS THE FORMATION OF REVERSING CURRENTS OF GREAT STRENGTH. IN EACH 24-HOUR PERIOD, THE WATER LINE CHANGES BY 7'-6", AND THE EAST RIVER BECOMES SALT WATER.



THE BROOKLYN BRIDGE WAS DESIGNED BY JOHN A. ROEBLING, BORN 1806, MUHLHAUSEN, GERMANY, AND DIED 1869, NEW YORK. HE RECEIVED TRAINING IN CIVIL ENGINEERING AT THE BERLIN POLYTECHNIC INSTITUTE, AND WORKED AS A SURVEYOR FOR THE PRUSSIAN GOVERNMENT UNTIL 1831, WHEN HE EMMIGRATED TO AMERICA. HIS BRIDGE BUILDING, PRIOR TO THE EAST RIVER COMMISSION, INCLUDED SUSPENDED STRUCTURES AT NIAGARA FALLS, PITTSBURGH, AND CINCINNATI. HE WAS APPOINTED CHIEF ENGINEER FOR THE EAST RIVER BRIDGE IN 1867. DURING THE SURVEY TO LOCATE THE BRIDGE CENTER LINE, ROEBLING WAS INJURED IN AN ACCIDENT NEAR THE FULTON FERRY SLIP, AND DIED BEFORE CONSTRUCTION BEGAN. THE BRIDGE WAS BUILT BY HIS SON, WASHINGTON A. ROEBLING (1837-1926) WHO, HAVING ASSISTED IN THE PREVIOUS BRIDGE COMMISSIONS, WAS GIVEN RESPONSIBILITY FOR THE UNDERTAKING UPON THE DEATH OF HIS FATHER. WASHINGTON ROEBLING RECEIVED TRAINING IN CIVIL ENGINEERING AT THE RENSSELAER POLYTECHNIC INSTITUTE AT TROY, NEW YORK. HE SERVED FROM 1861 TO 1865 IN THE UNION ARMY DURING THE CIVIL WAR, AND WAS THREE TIMES DECORATED FOR VALOR - AT ANTIETAM, CHANCELLORSVILLE, AND GETTYSBURG. HE REJOINED HIS FATHER'S STAFF, AND FROM 1867, WORKED ON PLANS FOR THE EAST RIVER PROJECT. THE SPAN PRESENTED PROBLEMS IN BRIDGE DESIGN THAT WERE UNPRECEDENTED.

THE FOUR MAIN BRIDGE CABLES WERE EACH COMPOSED OF 5,434 CONTINUOUS STEEL WIRES. THESE WERE LAID-UP AT THE SITE BY TRAVELLING SHEAVES, WHICH WERE DRAWN OVER THE TOPS OF THE TOWERS. THE MAIN CABLES WERE CARRIED THROUGH THE TOWERS ON EIGHT CAST IRON SADDLE BEARINGS OF 13 TONS EACH. FOR MORE THAN TWO YEARS, THIS STRANDING CONTINUED UNTIL THE MAIN CABLES REACHED THEIR BOUND DIAMETERS OF 15-3/4 INCHES. THE CABLES WERE HELD AT THEIR ENDS BY EIGHT LONG CHAINS OF 12-FOOT EYEBARS, WHICH BENT DOWN IN A 90-DEGREE ARC, AND WERE HELD FAST BY TWO MASONRY ANCHORAGES. EACH ANCHORAGE FORMED A GRANITE AND LIMESTONE DEADWEIGHT OF 60,000 TONS.

THE COST OF THE UNDERTAKING WAS \$15,000,000., ABOUT TWICE THE ORIGINAL ESTIMATE. TWENTY MEN LOST THEIR LIVES DURING THE COURSE OF ITS CONSTRUCTION, FROM THE SUMMER OF 1869 TO THE SPRING OF 1883.

THE ARCHITECTURAL CHARACTER OF THE BROOKLYN BRIDGE WAS DETERMINED BY JOHN ROEBLING, AND WAS BROUGHT TO COMPLETION 14 YEARS AFTER HIS DEATH BY WASHINGTON ROEBLING. ITS GENERAL LIKENESS TO THE ELEMENTS OF A GOTHIC CATHEDRAL HAS OFTEN BEEN NOTED - THE RESEMBLANCE TO LEADED WINDOW TRACERY PRODUCED BY THE INTERSECTING CABLES, THE APPEARANCE OF A TAPERING SPIRE CREATED BY THE INCLINED COURSES OF BEVELED STONES, THE IMPRESSION OF A DOUBLE DOORWAY GIVEN BY THE HIGH LANCET ARCHES OVER THE ROADWAY, THE EFFECT OF A CHURCH FACADE MADE BY THE PROJECTING FRONT BUTTRESSES - ALL TEND TO PLACE IN THE VIEWER'S MIND THE CHARACTERISTICS OF A GOTHIC CATHEDRAL. YET THE MOST ENDURING LEGACY OF THE ROEBLINGS REMAINS ON THE TECHNICAL LEVEL, AND IN 1964 THE STRUCTURE WAS DESIGNATED A NATIONAL HISTORIC CIVIL ENGINEERING LANDMARK BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS. MANY HISTORIANS HAVE CONSIDERED THIS ORIGINAL SPANNING OF THE EAST RIVER TO BE THE GREATEST TECHNOLOGICAL FEAT OF THE 19TH CENTURY, AND FEW SUSPENSION BRIDGES IN THE WORLD BUILT SINCE THE TIME OF THE ROEBLINGS CAN CLAIM TO STAND ENTIRELY CLEAR OF THE SHADOW CAST BY THE BROOKLYN BRIDGE.

HISTORIC AMERICAN ENGINEERING RECORD
 SHEET 1 OF 1
 NEW YORK
 BROOKLYN
 1869-1883
 SPANNING THE EAST RIVER FROM PARK ROW, MANHATTAN TO ADAMS ST., BROOKLYN
 NEW YORK AND KINGS COUNTIES
 DELINEATED BY: PAUL BERRY 1965
 HISTORIC AMERICAN BUILDINGS SURVEY
 HISTORIC AMERICAN ENGINEERING RECORD
 UNITED STATES DEPARTMENT OF THE INTERIOR