# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

### Duluth, St. Louis County, Minnesota

**Identification**

**Historic Name** DM&N/DM&IR Ore Dock No. 6 Approach

**Current Name** DM&N/DM&IR Ore Dock No. 6 Approach

**Field #**

**Address** n/a Ore Dock No. 6 Approach over Multiple Streets

**City/Twp** Duluth

**County** St. Louis

**Legal Desc. Twp** 49 **Range** 14 **Sec** 5 **QQ**

**USGS Quad** Duluth Heights

**UTM Zone** 15N **Datum** NAD83

**Easting** 565753 **Northing** 5177951

**Property ID (PIN)**

**SHPO Inventory Number** SL-DUL-0014

**Review and Compliance Number**

**Form (New or Updated)** New

**Description**

**Linear Feature?** Yes **Linear Length:** 1.1 miles

**HPC Status:** Unknown

**Resource Type** Structure

**Architect/Engineer** DM&N

**Style** No Style

**Construction Date** 1917-1918

**Original Use** Transportation

**Current Use** Transportation

**Description**

The Duluth, Missabe & Northern Railway (DM&N) / Duluth, Missabe & Iron Range Railway (DM&IR) Ore Dock No. 6 Approach is more than a mile-long, multi-span, riveted steel deck girder structure that historically carried the DM&N / DM&IR (SL-DUL-2499) over several city streets in Duluth to the DM&N / DM&IR Ore Dock No. 6 (SL-DUL-0014), which is sited in the St. Louis Bay of Lake Superior. The approach (also known as a viaduct) and the ore dock were constructed in 1917-1918 by the DM&N, the predecessor of the DM&IR. The approach and ore dock, which have a northwest to southeast alignment, are located in an industrial and residential area of Duluth. The approach structure is 5,507.87 feet long, with a deck located 84 feet above the Lake Superior water line (DM&N 1916). Ore Dock No. 6 is 2,304 feet or 2,334 feet long (sources conflict), 65 feet 6 inches wide, and stands 84 feet above the water line (DM&N 1916; Dorin 2007:15). Combined, the approach and ore dock, including its platform, are 7,851.64 feet in length (DM&IR 1985).

The approach, which generally follows a northwest to southeast alignment, with a gentle curve near its midpoint, is comprised of 59 deck plate girder spans of varying lengths, four of which have their own bridge designation for MnDOT administrative purposes since they cross over public streets: Bridge 7632 (SL-DUL-2421), Bridge 7627 (SL-DUL-2419), Bridge L6137 (SL-DUL-2424), Bridge 69833 (crossing over Interstate 35).

The superstructure of the viaduct is supported by a substructure comprised of rigid frame steel bents resting on steel base plates set atop concrete footings. Except where the viaduct crosses over streets, the bents are set perpendicular to the spans. There are two types of bents, which have either two or four leg and are one or two panels tall, depending on location. The one exception is the bent supporting the middle of Bridge 69833, which is a steel bent installed in 1966-1967. The bents consist of latticed bents (legs) that support a plate girder bent cap, with latticed strut and angle iron sway bracing that is attached to the legs of the bents by gusset plates. The substructure supports a superstructure consisting of two parallel deck girder spans that extend the length of the approach. Individual spans range from 12 to 85 feet in length, with 70 feet spans and 30 feet spans over the four legged bents being the most common (DM&N 1916). Within each span there is sway bracing between the girders. Originally, the two parallel spans each carried a single track. Today, the two deck girder spans collectively carry a single reinforced concrete bridge deck that is partially cantilevered. The tracks are still extant.

Bridge 7632 (Span 8) (SL-DUL-2421)
Bridge 7632 is located at the western end of the approach structure, between the abutment and Bridge 7627. It is a single span, deck girder structure of riveted steel construction that carries the ore dock approach over Grand Avenue/West 3rd Street. According to MnDOT, Bridge 7632 has a main span length of 48.5 feet and a deck width of 30 feet (including the walkway). Grand Avenue/West 3rd Street is 42 feet wide underneath the span (MnDOT 2012:7632). The span is set at a 90 degree angle to

the roadway.

The superstructure of Bridge 7632 is supported by a substructure comprised of a steel bent on each side of the roadway. The bents, which are set parallel to the roadway, rest on steel base plates atop concrete footings. The rigid frame consists of two latticed bents that support a plate girder bent cap. The two panel bents have latticed strut and angle iron sway bracing that are attached to the bents by gusset plates. The bents support two deck girder spans, which historically each carried a single track. Within each span there is sway bracing between the girders. Today, the two deck girder spans collectively carry a single reinforced concrete bridge deck that rests directly upon the girders. The deck carries two active sets of tracks. A partially cantilevered reinforced concrete walkway rests upon the edge of the bridge deck and is supported by steel brackets. An angle-iron, bi-rail railing extends along the outside edge of the walkway. A single light post is located on the southwest side of the walkway. The modern, tapered aluminum standard has a flared square base with clipped corners, bolt stanchions, and a mercury vapor lamp. The light post has a modern cantilevered base plate that projects from the side of the walkway.

Bridge 7627 (Span 14) (SL-DUL-2419)
Bridge 7627 is located towards the western end of the approach structure, between Bridge 7632 and Bridge L6137. It is a single span, deck girder structure of riveted steel construction that carries the ore dock approach over Carlton Street. According to MnDOT, Bridge 7627 has a span length of 78 feet and a deck width of 30 feet (including the walkway). Carlton Street is 39.2 feet wide underneath the span (MnDOT 2012:7627). The span is set at an approximately 45/135 degree angle to the roadway.

The superstructure of Bridge 7627 is supported by a substructure comprised of a steel bent on each side of the roadway. The bents, which are set at a 45/135 degree angle to the girders, rest on steel base plates atop concrete footings. The rigid frame consists of two latticed bents that support a plate girder bent cap. The two panel bents have latticed strut and angle iron sway bracing that are attached to the bents by gusset plates. The bents support two deck girder spans, which historically each carried a single track. Within each span there is sway bracing between the girders. Today, the two deck girder spans collectively carry a single reinforced concrete bridge deck that rests directly upon the girders. The deck carries two active sets of tracks. A partially cantilevered reinforced concrete walkway rests upon the edge of the bridge deck and is supported by steel brackets. An angle-iron, bi-rail railing extends along the outside edge of the walkway. A single light post is located on the southwest side of the walkway. The modern, tapered aluminum standard column has a flared square base with clipped corners, bolt stanchions, and a mercury vapor lamp. The light post has a modern cantilevered base plate that projects from the side of the walkway.

Bridge L6137 (Span 31) (SL-DUL-2424)
Bridge L6137 is located near the middle of the approach structure, between Bridge 7627 and Bridge 69833. It is a single span, deck girder structure of riveted steel construction that carries the ore dock approach over West Superior Street. According to MnDOT, Bridge 7627 has a main span length of 56.8 feet and a deck width of 32 feet. West Superior Street is 44 feet wide underneath the span (MnDOT 2012:L6137). The span is set at a 90 degree angle to the roadway.

The superstructure of Bridge L6137 is supported by a substructure comprised of a steel bent on each side of the roadway. The bents, which are set perpendicular to the girders, rest on steel base plates atop concrete footings. The rigid frame consists of two latticed bents that support a plate girder bent cap. The two panel bents have latticed strut and angle iron sway bracing that are attached to the bents by gusset plates. The bents support two deck girder spans, which historically each carried a single track. Within each span there is sway bracing between the girders. Today, the two deck girder spans collectively carry a single, partially cantilevered, reinforced concrete bridge deck that rests directly upon the girders. The deck carries two active sets of tracks. An angle-iron, bi-rail railing extends along the outside edges of the deck. A single light post is located on the southwest side of the walkway. The modern, tapered aluminum standard has a flared square base with clipped corners, bolt stanchions, and a mercury vapor lamp. The light post has a modern cantilevered base plate that projects from the side of the deck girder.

Bridge 69833 (Spans 46-48)
In 1966-1967, Spans 46-48 were modified to accommodate the construction of Interstate 35 beneath them (Mead & Hunt 2004). The modification included replacing Bents 46 and 47 with a single bent and replacing Span 47 with new girders that were spliced with Spans 45 and 48. Between Bents 45 and 48 a drainage pan was installed under the spans and a chain link along each side. The lower potions of Bents 45 and 48 were also encased in concrete. Upon the completion of this work, Spans 46-48 were

given the name Bridge 69833 by MnDOT (MnDOT 1964).

**Integrity -**

DM&N / DM&IR Ore Dock No. 6 and its approach are sited in their original location in Duluth, as part of the DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor, and retain their integrity of location and setting.

As active structures, the ore dock and its approach have been regularly maintained to allow them to continue in their historic use, resulting in mostly minor, insignificant alterations. As compared to original plans and photos from its construction in 1917-1918, the only notable alterations to the ore dock and approach are the replacement of the original deck with a reinforced concrete deck on the approach prior to 1964, and the 1966-1967 alterations to Spans 46-48 that included the replacement Span 47 and Bents 46 and 47 with a single bent (MnDOT 1964). Other minor alterations include modern railings and lights, and the removal and/or addition of small "shacks" and covers over operating equipment on the dock and approach. However, given the overall size and enormity of the entire structure (ore dock and its approach), these alterations minimally impact the overall design and feeling of the structure as a whole. Therefore, the structure as a whole (ore dock and its approach) retains sufficient integrity of design, materials, and workmanship to convey its historic feeling and association. Therefore, it retains sufficient historical integrity to convey its historical significance.

Based on construction plans and historical photographs from 1918 of the Ore Dock No. 6 Approach, its substructure, including the bents, cross bracing, base plates, and footings, appears to be relatively unaltered except for the 1966-1967 alterations that included replacing Bents 46 and 47 with a single bent and encasing the lower potions of Bents 45 and 48 in concrete. Additionally, the girders and bracing comprising the superstructure also appear to be relatively unaltered, except for the replacement of a short 30 foot span (Span 47) in 1966-1967 as part of the ongoing historic use of the structure. Therefore, the principal components of the structure, its substructure and superstructure, retain sufficient integrity of design, materials, and workmanship. While the structure originally had a ballasted deck on a solid rail deck, the rail deck was replaced with reinforced concrete prior to 1964, this only slightly compromises the integrity of design and materials of the approach structure. Moreover, this was done as part of the ongoing use of the structure, thus it does not compromise the structure from its period of significance. Additionally, the alterations over time, such as shanties and covers over equipment, minimally affect the feeling of the structure, so it still retains integrity of feeling and association. Therefore, the DM&N / DM&IR Ore Dock No. 6 Approach retains integrity to convey its historical significance.

## EVALUATION AND ANALYSIS

**Historical Context**

Railroads in Minnesota, 1862-1956
Minnesota's Iron Ore Industry, 1880s-1945
Mining Development on the Iron Range, 1892-1954

**Historical Narrative**

Mesabi Iron Range
The Mesabi Range was the second of three iron ranges discovered in Minnesota. The first iron ore was found on the Vermillion Range in northeastern Minnesota in 1882 and began being shipped by rail in 1884 on the Duluth & Iron Range Railway (D&IR) to Two Harbors, Minnesota where it was loaded onto ships destined for steel mills in the East. On November 16, 1890, a survey party organized by the Merritt family of Duluth discovered the first hematite iron ore on the Mesabi Range near Mountain Iron. After their initial discovery, the Merritt's continued to find additional deposits, including one in Biwabik in August 1891, and they began purchasing and leasing hundreds of square miles of lands for mining purposes. Word quickly spread and by 1891, northeastern Minnesota was consumed with "mining fever." Soon dozens of companies were obtaining leases for ore exploration. By the spring of 1892, the Merritt's and others had opened a number of mines on the Mesabi Range, and more deposits continued to be found. Later in 1892, ore was discovered in Hibbing, Virginia, and Eveleth, and mines were soon opened in these areas (Zellie 2005:1-13). However, despite the promise of the rich deposits, due to shipping challenges, the ore remained almost worthless until the first railroad reached the Mesabi Range in October 1892 (Zellie 2005:2-7; Prosser 1966:35).

At the time of their discovery, the iron deposits on the Mesabi Range were the richest in the world. Initially, mines were developed along the Eastern Mesabi Range due to its standard ore that could be shipped as extracted. The Western Mesabi Range was slower to develop due to its washable ore bodies, which required treatment before shipping (Zellie 2005:1-14). During the first decade of mining more that 53,000,000 gross tons of ore was shipped from the Mesabi Range, growing from 4,245 tons in 1892 to more than 13,000,000 tons in 1902 (Zellie 2005:2-11). By 1912, more than 100 mines had opened on the Mesabi Range and more than 70,000 people had settled in the region (Zellie 2005:2-1, 2-2). Production continued to increase at an exponential rate through the early twentieth century, averaging 400,000,000 tons per decade between 1910 and 1930 (Zellie 2005:2-11).

During the Great Depression demand for steel was greatly curtailed and ore output from the Mesabi Range decreased by nearly 50 percent. Production hovered around 12,500,000 tons per year through the early 1930s. However, with the onset of World War II, the demand for steel skyrocketed and the mines on the Mesabi Range responded, culminating in a shipping peak in 1942. Similar, near peak shipments were made during the Korean War in the early 1950s (Zellie 2005:2-11-2-12). After the end of the Korean War in July 1953, the iron mining industry fell into decline as demand for steel weakened. By 1954, many mines on the Mesabi Range ceased production and over time most of the buildings and rail spurs were removed (Zellie 2005:2-55).

The DM&N and the DM&IR

In 1937, the D&IR and the DM&N merged to form the DM&IR. The history of the DM&IR and its predecessor roads is inextricably linked to iron mining in Minnesota. The D&IR is the older of the two predecessor lines and was originally constructed to serve the Vermillion Range, while the DM&N was built to serve mines on the Mesabi Range. Chartered in 1874, but not constructed until 1884, the D&IR extended from an ore dock on Lake Superior at Two Harbors, Minnesota, to the Soudan Mine (Tower Junction). Two years later, the D&IR built a line from Two Harbors to Duluth, and later extended lines into the Mesabi Range (Prosser 1966:127-130).

The DM&N was built by a Duluth-based consortium led by the Merritt Brothers. As their mining operations took off, the Merritt's needed a way to transport the ore from their mines on the Mesabi Range to the Twin Ports so it could be shipped via the Great Lakes to Eastern steel mills (Agranat and Foster 1991:E-23). The Merritt's attempted to get the D&IR, the Northern Pacific Railway, and the St. Paul & Duluth Railroad to construct a line to the Range, all to no avail. They then entered into a "traffic contract" with the Duluth & Winnipeg Railroad (D&W) to haul their ore from Stony Brook Junction (Brookston) to Duluth. However, since it was uneconomical to ship the ore 50 miles by wagon to Stony Brook Junction, the Merritt's and their group of investors incorporated their own railroad, the DM&N, to build a line to serve the Range (DM&IR 1967; Prosser 1966:35).

Incorporated on May 26, 1891, construction on the DM&N began in the summer of 1892 at Stony Brook Junction, where the line connected with the D&W, and then extended northward 48 miles to Mountain Iron. The line was completed by mid-October and the first ore shipment on the DM&N train soon left the Mesabi Range. Traveling via the DM&N to Stony Brooke Junction, then on the D&W, the train reached the still to be completely finished D&W Allouez Docks, located east of Superior, Wisconsin, on October 18, 1892. The first shipment on Lake Superior from the Allouez Dock would occur nearly a month later, on November 11, 1892 (Prosser 1966:35; Agranat and Foster 1991:E-25; DM&IR 1967).

Although the Merritt's had a traffic agreement with the D&W to provide ore cars and to deliver their ore to Lake Superior, several factors spurred them to build their own line to Duluth, including a failure of the D&W to provide a sufficient number of cars for shipping their ore and by the fierce rivalry between Duluth and Superior for supremacy at the Head of Lakes. As residents of Duluth, using the D&W dock in Superior undermined Duluth's efforts to win this battle. Enticed by financial incentives in the form of bonds from Duluth financiers, in 1893, the DM&N under the direction of Merritt's began construction on the Duluth Extension from Columbia Junction (Culver), which was located a few miles north of Stony Brook, to Missabe Junction in Duluth (the present location of the ore docks). The Merritt's built the line despite the advice of DM&N President Kelsey Chase, who recommended against it due to a lack of sufficient funds. The construction of wooden Ore Dock No. 1 in Duluth was begun at the same time. The line and the ore dock were completed in July and the first shipment arrived from the Mountain Iron mine on July 22, 1893 (DM&IR 1967; Prosser 1966:35-36).

The large cost incurred by the DM&N to build this line and construct Ore Dock No. 1, coupled with the financial panic of 1893, caused the Merritt Brothers to become overextended, even before construction was completed. John D. Rockefeller had purchased over $500,000 worth of DM&N bonds in December of 1892. The following year the Merritt's approached Rockefeller to get direct financial support for their Mesabi Range mines, for which an agreement was prepared and their companies were consolidated into the Lake Superior Consolidated Iron Mines. As the depression deepened the Merritt's creditors forced them to sell all their holdings, so in January 1894, Rockefeller purchased all of the Lake Superior Consolidated Iron Mines stock for $900,000, which included all the Merritt's mining properties on the Mesabi Range, the DM&N, and the ore dock in Duluth (Agranat and Foster 1991:E-26).

In 1896, the Lake Superior Consolidated Iron Mines was leased to the Carnegie Steel Company. In 1901, the DM&N was consolidated along with other mining, railroads, and steel interests into the United States Steel Corporation (U.S. Steel) (Prosser 1966:36). Due to financial pressures resulting from a steep decline in demand for iron ore as the nation entered the Great Depression, the DM&N began leasing the D&IR in the 1930s (Mead & Hunt 2004:72). On July 1, 1937, the DM&N was officially consolidated with the D&IR to form the DM&IR (Prosser 1966:130). The DM&IR was acquired by the Canadian National Railway on May 10, 2004.

The DM&N Duluth Ore Docks

Corresponding with the construction of its line to Missabe Junction in 1893, the DM&N completed its first wooden ore dock in Duluth, known as Ore Dock No. 1 (U.S Army Corps of Engineers n.d.). The dock had 384 pockets with a total capacity of 57,600 tons. This dock was taken out of service in 1905 since it was too low to load the larger ships that were now plying the Great Lakes and it was in need of repairs (Dorin 2007:15; Leopard 2005:42). As ore shipments increased, the DM&N constructed additional wood ore docks in Duluth (Hirsimaki 1991:167). Ore Dock No. 2, was constructed between 1895 and 1896, reconstructed and upgraded when Ore Dock No. 1 was taken out of service in 1905, and removed in 1916 to make way for the construction of Ore Dock No. 6 (Dorin 2007:15; DM&IR 1967). Ore Dock No. 3 was constructed between 1899 and 1900. Originally built with 192 pockets, an extension was added to it in 1904-1005 to increase its capacity (Dorin 2007:15). It is not know exactly when Ore Dock No. 3 was dismantled. Ore Dock No. 4 was built in 1906 and was the last and largest wood ore dock ever constructed (Dorin 2007:15; Leopard 2005:43). It had a 384 pockets (192 per side), each with a 200 ton capacity, and a total capacity of 119,274 tons (Hirsimaki 1991:169). The last wooden ore dock on the DM&N to survive, Ore Dock No. 4, was finally dismantled in 1929 (DM&IR 1967).

Wood ore docks began to fall out of favor on the Great Lakes in the early twentieth century, approximately between 1909 and 1920. In 1909, the D&IR constructed the first steel ore dock in the United States in Two Harbors, Minnesota. Although the dock was relatively small, only 920 feet in length, with 148 pockets and a capacity of 43,246 tons, it established a precedent that would soon be followed at other iron ore ports on the Great Lakes. The benefits of steel docks were that they allowed for higher capacities, less maintenance, and were less likely to catch fire (Hirsimaki 1991:171). The DM&N followed this trend when U.S. Steel authorized construction on the first steel ore dock in Duluth (DM&IR 1967). Construction on the substructure of the approach and dock of Ore Dock No. 5 started on January 31, 1913 and was completed by November 26, 1913. The dock opened in 1914. The structure was designed by DM&N staff including, H.L. Dresser, Chief Engineer; W.H. Hoyt, Assistant Chief Engineer; and F.C. Balyss, Assistant Engineer (Missabe Railroad Historical Society 2012a; DM&IR 1967). The plans were prepared by the American Bridge Company (American Bridge Company 1913). The Bates & Rogers Construction Company of Chicago, Illinois was the general contractor and the Whitney Brothers Company served as the subcontractor for pile driving. The massive substructure of the approach and dock took 14,582 timber piles, 5,197 pieces of U.S. Steel sheet piling, 24,225 cubic yards of concrete, and 27,508 barrels of Universal Portland Cement to construct (Missabe Railroad Historical Society 2012b; DM&IR 1967). While the steel girders have been painted over, thus covering manufacturer markings, according to the 1913 construction photos, the girders were fabricated by the American Bridge Co., Gary (Indiana) Plant (Missabe Railroad Historical Society 2012a). Place in service in 1914, Ore Dock No. 5 cost approximately $3,000,000 to construct (DM&IR 1967). The gravity feed ore dock is 2,304 feet long, stands 80 feet above the water line, and has 384 pockets, each with a storage capacity of 300 tons, for a total capacity of 115,200 tons (MnDOT 1989:16; Baggo and Sommer 1984:Section 7). At the time of its completion it had the largest capacity of any dock on the Great Lakes. However, this distinction only lasted until the completion of the adjacent DM&N Ore Dock No. 6 in 1918 (Leopard 2005:44). In 1985, Dock No. 5 was retired in-place because the dock

was not needed by the DM&IR under the tonnage levels being shipped at that time (Seaway Port Authority of Duluth 1990:4).

The last and largest capacity ore dock constructed by the DM&N in Duluth was Ore Dock No. 6. Construction on Ore Dock No. 6 began in 1917, in the location where Ore Dock No. 2 had stood. The gravity feed ore dock is 2,304 feet long, 84 feet 5 inches above the water, and had a total capacity of 153,600 tons. At the time of its completion in 1918, Ore Dock No. 6 was the largest ore dock ever built, and is still the largest dock in operation today (Dorin 2007:15). The original open decks on the two spans were replaced with a single concrete deck sometime prior to 1964 (MnDOT 1964). Spans 46-48 were modified according to plans by HNTB in 1966-1967 to accommodate the construction of Interstate 35 beneath them (Mead & Hunt 2004; MnDOT 1964). In 1981, the capacity of Ore Dock No. 6 was expanded when the DM&IR spent $26,000,000 to construct a shiploader facility adjacent to the dock so it could accommodate 1,000 foot long ships, and a ground storage facility with a capacity of 3,100,000 tons of taconite pellets north of the dock (Seaway Port Authority of Duluth 1990:4).

**Significance**

The DM&N / DM&IR Ore Dock No. 6 Approach is a part of the DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor and was constructed as part of Ore Dock No. 6. The DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor was previously determined eligible for listing in the NRHP under Criterion A, within the area of history for its association with the historic mining transportation system in Duluth (MnDOT Cultural Resources Unit Correspondence with Mead & Hunt, 5 April, 2004).

The DM&N / DM&IR Ore Dock No. 6 Approach has significance as a contributing resource to the DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) line. This railroad line has local and statewide significance under NRHP Criterion A within the historical context that was established in the "Railroads in Minnesota, 1862-1956 Multiple Property Documentation Form (MPDF)" (Schmidt et al. 2007:F-194-196). Within the "Railroads in Minnesota, 1862-1956 MPDF" the railroad corridor meets Registration Requirement 2, as a railroad corridor historic district, because it provided transportation between a significant class of resources (iron ore) and an important transfer point for this product (ore docks on Lake Superior at Duluth). Moreover, as the first railroad line to reach the Mesabi Range, it established an important railroad connection that did not previously exist, thereby enabling the profitability, and corresponding significant expansion of iron mining on the Range. Upon its completion, the DM&N provided mine owners with a means to cost effectively ship ore to Lake Superior, where it could be transferred to ships destined for steel mills hundreds of miles away. Until the DM&N reached the Mesabi Range, its ore deposits were of little value due their distance from mills. However, with the completion of the DM&N, iron mining on the Mesabi Range took off, with production increasing from a mere 4,245 tons in 1892 to more than 13,000,000 tons in 1902 (Zellie 2005:2-11). The Range quickly became the leading producer of iron ore in the United States, a status it has held for over a century. As the primary carrier of iron ore from the Mesabi Range to Lake Superior, the DM&N and later, the DM&IR, were responsible for the viability and profitability of iron mining on the Mesabi Range, and its success as a major industry in Minnesota.

The DM&N / DM&IR Mountain Iron to Mesabi Junction railroad corridor also meets Registration Requirement 3 within the "Railroads in Minnesota, 1862-1956 MPDF" as it made an important connection with other modes of transportation, specifically shipping on the Great Lakes. The railroad's ore docks on Lake Superior at Duluth were an important transfer point where hematite iron ore, and later taconite, was transferred from ore cars to ships destined for Eastern steel mills, including those in steel factories in Gary, Indiana; Cleveland, Ohio; and Erie, Pennsylvania.

Additionally, the DM&N / DM&IR, Mountain Iron to Mesabi Junction (Duluth) railroad corridor, including the ore docks in Duluth, has statewide and local significance within the statewide historical contexts "Minnesota's Iron Industry, 1880s-1945" and "Mining Development on the Iron Range, 1892-1954." Within the context "Minnesota's Iron Industry, 1880s-1945", the importance of the Mesabi Range to the economy of Minnesota is reflected in the fact that between 1910 and 1980, 70 percent of the iron ore extracted from the Lake Superior Region came from the Mesabi Range (Zellie 2005:2-5). Moreover, the importance of the Mesabi Range to the entire nation and U.S. steel production, is demonstrated by the fact that during this same period, it was responsible for production of about 60 percent of the usable iron ore produced by the U.S. (Zellie 2005:2-5, 2-11). By 1954, more than 64 percent of the usable iron ore produced in the U.S. came from Minnesota, with more than 93 percent of the ore originating on the Mesabi Range. As of 2003, more than 73 percent of the usable iron ore produced by the U.S. came from six Mesabi Range taconite plants (Zellie 2005:2-11). The period of significance for iron mining on the Mesabi Range begins in

1892, corresponding with the first shipment of ore from the Mountain Iron Mine, and extends to 1945, corresponding with the end of the period of significance for this context.

Within the historical context "Mining Development on the Iron Range, 1892-1954", railroad right-of-ways, including long-term investments, such as grades and bridges; as well as related buildings, structures, and objects, such as depots, signal buildings, and signals can be significant for their association with iron mining on the Mesabi Range (Zellie 2005:2-55). The DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor, which includes the railroad's ore docks in Duluth, was instrumental in the success of iron mining on the Mesabi Range and the broader iron mining industry in Minnesota. The DM&N / DM&IR was the first railroad to serve the Mesabi Range, was the largest carrier of iron ore in terms of gross tons, and remained an integral component of the iron mining industry in Minnesota into the twenty-first century, carrying 4,600,000 tons of iron ore in 2001. It remains the largest iron ore carrying railroad in North America (Mead & Hunt 2004:11, 73). As such, the DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor has statewide significance under NRHP Criterion A, with the historical contexts "Minnesota's Iron Industry, 1880s-1945" and "Mining Development on the Iron Range, 1892-1954." The period of significance for the DM&N / DM&IR, Mountain Iron to Mesabi Junction (Duluth) railroad corridor begins in 1892, corresponding with the construction of the segment between Stony Brook Junction and Mountain Iron, and concludes in 1954, corresponding with the downturn of iron mining on the Mesabi Range after the end of the Korean War. While the Range continued to produce ore, after 1954, the demand for steel weakened and the iron industry fell into decline. As a result, many mines were subsequently idled and over time most of the buildings and rail spurs were removed (Zellie 2005:2-55).

The DM&N / DM&IR ore docks in Duluth were a critical component of the efficient, cost-effective transportation system that enabled the enduring success (and profitability) of iron mining on the Mesabi Range even though it was located hundreds of miles from the majority of the mills it supplied. DM&N / DM&IR Ore Dock No. 6, including its approach, also exemplify efforts of the iron mining industry, including its multi-modal transportation system, and specifically the DM&N, to utilize technology and improve its facilities in order to improve efficiency and reduce shipping costs as these all-steel structures were essentially fire proof, could accommodate heavier trains, hold more ore, and required less maintenance than wood docks (Hirsimaki 1991:171). Therefore, they are contributing resources to the DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor within the historical contexts "Railroads in Minnesota, 1862-1956", "Minnesota's Iron Industry, 1880s-1945", and "Mining Development on the Iron Range, 1892-1954." The recommended period of significance for the DM&N / DM&IR Ore Dock No. 6 Approach is 1918-1954, corresponding with its construction as part of Ore Dock No. 6 and concluding in 1954, when iron mining on the Mesabi Range was greatly curtailed due to a decreased demand for steel.

**Recommendation**

The DM&N / DM&IR Ore Dock No. 6 Approach is a part of the DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor and was constructed as part of Ore Dock No. 6. The DM&N / DM&IR railroad corridor was previously determined eligible for listing in the NRHP under Criterion A, within the area of history for its association with the historic mining transportation system in Duluth (Mead & Hunt 2004:73). Within the "Railroads in Minnesota, 1862-1956 MPDF," this line meets Registration Requirement 2, for the important role it played in the efficient and economical transportation of iron ore from the Mesabi Range to Eastern steel factories hundreds of miles away. This cost-effective transportation system enabled the Mesabi Range to be the leading producer of iron ore in the U.S. for more than 70 years. In addition, the DM&N / DM&IR, Mountain Iron to Mesabi Junction (Duluth) railroad corridor meets Registration Requirement 3 by making important connections with other modes of transportation, specifically shipping on Lake Superior. The railroad has a period of significance of 1892-1954. The DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor is also significant within the historical contexts "Minnesota's Iron Industry, 1880s-1945" and "Mining Development on the Iron Range, 1892-1954" For the role it played in the early growth and ongoing prosperity of iron mining on the Mesabi Range during the period 1892 to 1954.

The ore docks in Duluth, including their approaches, were a key component of the success of this transportation system, by providing a quick and efficient way to transfer ore from railroad cars to ships. The DM&N / DM&IR Ore Dock No. 6 Approach was constructed in 1917-1918 as part of Ore Dock No. 6. The ore docks in Duluth, including Ore Dock No. 6 and its approach, were integral to the success of iron mining on the Mesabi Range. They provided the industry with an efficient, cost-effective

means for transferring ore from railroad ore cars to ships destined for Eastern steel mills. As a whole, Ore Dock No. 6 and its approach, retains sufficient integrity to convey their historical significance, and are therefore recommended as eligible for the NRHP as contributing structures to the DM&N / DM&IR Mountain Iron to Mesabi Junction (Duluth) railroad corridor. The recommended period of significance for Ore Dock No. 6 and its approach is 1918-1954. Spans 1-46 and 48-61 of the approach structure, including Bridges 7632, 7627 and L6137, are recommended as contributing elements of the DM&N / DM&IR Ore Dock No. 6 Approach. Two of the spans that comprise Bridge 69833 (Spans 46 and 48) are contributing since they were built as part of the original approach. While Span 47 was replaced to maintain the ongoing historic use of the structure, it is recommended as non-contributing element to the approach since its substructure and superstructure post-date the period of significance for the approach.

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# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

### Duluth, St. Louis County, Minnesota

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**National Register Status**

Determined Eligible

**Consultant's Recommendation of Eligibility**

Eligible - Contributing

**Linear Feature - Counties**

**Linear Feature - Associated Historic Properties**

**Prepared By**

Greg Mathis
The 106 Group Ltd.

**Date Surveyed**

7/15/2013

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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### Property Photograph

Ore Docks, Facing SE

### Property Photograph

Ore Docks and Approaches, Facing SE

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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### Property Photograph

Ore Dock No. 6 and Approach, Facing SE

### Property Photograph

Ore Dock No. 6 and Approach, Facing SE

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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**Property Photograph**

Ore Dock No. 6 Approach, Facing SW

**Property Photograph**


Ore Dock No. 6 Approach, Facing SW

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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**Property Photograph**

Ore Dock Abutment, Facing S

**Property Photograph**

Bridge 7627 Bents, Facing SE

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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**Property Photograph**

Bridge L6137 Bents, Facing W

**Property Photograph**

Underside of Bridge 7627, Facing NW

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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### Property Photograph

Bridge 7632, Facing N

### Property Photograph

Bridge 7627, Facing WNW

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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**Property Photograph**

Bridge L6137, Facing SW

**Property Photograph**

Bridge 69833, Facing N

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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**Property Photograph**

Ore Dock No. 6, Facing NE

**Property Photograph**

Ore Dock No. 6, Facing SE

# *MINNESOTA ARCHITECTURE - HISTORY INVENTORY FORM*

## Project: Local Historic Bridge Study - Phase II

**Duluth, St. Louis County, Minnesota**

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**Property Location Map**


SL-DUL-0014