### Statement of Estimated Quantities

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### Notes

1. REFER TO SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. PROVIDE WORK EARLY CONCRETE MIX SHAPES.
3. EXISTING MATERIAL SHALL BE DISPOSED OF OFF PROJECT RIGHT-OF-WAY (INCIDENTAL).
4. STORM DRAIN INLET PROTECTION TO BE PAID FOR EACH AT LOCATION REGARDLESS OF QUANTITY USED AT EACH LOCATION OR MAINTENANCE AS REQUIRED AT EACH LOCATION.
5. MODIFIED SUCH THAT THE PENDANT PASSING THE GOOD SIDE SHALL NOT EXCEED 7/16.
6. INCLUDES MATERIAL OF EXISTING SEWER PIPE AS REQUIRED TO COMPLETE WORK.
7. FOR FRACTIONAL COORDINATE, REFER TO STANDARD TABLE 20.
8. CONFIRM CURB REMOVAL AND REPLACE UNITS BASED ON "A" REVIEW OF TRENCH CONDITIONS.
9. SHALL BE PURCHASED BY CITY OF DUBUQUE FOR GARFIELD AVENUE FOR INSTALLATION BY CONTRACTOR.
10. HOSE AND ATTACHMENT, TRANSITION, COUPLING, AND ADJUSTABLE SHOT COULD BE INCIDENTAL.
12. PROVE TO MATCH INFRASTRUCTURE CORRECTLY.
13. REMOVAL AS REQUIRED TO RECONNECT WIRE DRAINAGE PIPE. PROVIDE PC MANHOLE WHERE MANHOLE IS REQUIRED (INCIDENTAL). MINIMUM LENGTH OF JUMPY SHALL BE 20 FT. CONNECT TO EXISTING DRAIN OR CATCH BASH AS NEEDED (INCIDENTAL).
14. EXISTING PIPELINE EXCAVATION SHALL BE BY MECHANICAL METHODS ONLY. BACKHOE IS NOT PERMITTED.
15. PROVIDE HYDRAULIC EXCAVATION FOR PIPE WORKS FULLY SUPPORT CROSSING INFRASTRUCTURE UTILITIES. BACKHOE EXCAVATION WITH 3" PNEUMA PIPE GRAVEL TO BOTTOM OF RUNWAY SELECT GRANULAR OR AS DIRECTED BY ENGINEER. HYDRAULIC EXCAVATION AND PEA GRAVEL SHALL BE CONSIDERED INCIDENTAL.
16. INCLUDES "A" BOLT.
17. INCLUDES VALUE AS SCIENCE PIPE REMOVAL, AS REQUIRED.
18. PROVIDE [ ] EACH COVER AND CASTING FOR STORM MANHOLE PIPE CITY DETAIL, Strom-1. PROVIDE [ ] EACH DRAIN AND CASTING FOR SANITARY MANHOLE PIPE CITY DETAIL, Strom-1. PROVIDE [ ] EACH ELECTRICAL MANHOLE (EXCEPT EXISTING), INCLUDES FRAME, FRAMES AND CASTING PROVIDE [ ] EACH WIRE FLEX MANHOLE (EXISTING), INCLUDES FRAME, FRAMES AND CASTING.
19. EXPANSION JOINTS.
20. PROVIDE HYDRAULIC EXCAVATION AND 3" PEA GRAVEL, BACKHOE FOR HYDRAULIC AS NEEDED (INCIDENTAL).
21. SEAL ENS AND FILL WITH SAND.
22. GAS MAIN FITTINGS, COUPLINGS IS INCIDENTAL.
GENERAL CONSTRUCTION NOTES

1. WITHIN THE PLAN WORKED THE WORD "TANGENTIAL" IS USED IT SHALL MEAN NO DIRECT PAYMENT WILL BE MADE FOR THAT ITEM.

2. CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING PUMPS AND PUMPS DESIGNED TO REMAIN, ANY PIPING OR VALVES CHANGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR AT HIS COST.

3. GRADES SHOWN ARE FINISH SURFACE ELEVATIONS, THE CONTRACTOR SHALL MAKE APPROPRIATE DEDUCTIONS FOR VARYING SURFACES TO DETERMINE SUBSURFACE ELEVATIONS.

4. ALL EXISTING AND PROPOSED STRUCTURE ACCESS COUPS SHALL BE ADJUSTED TO FINISHEDGRADE BY THE CONTRACTOR.

5. ALL CONCRETE TRUCKS SHALL WASH OUT WITHIN THE PROJECT LIMITS AWAY FROM ANY WATERWAYS OF THE STATE INCLUDING HIGWAY DITCHES AT A LOCATION SPECIFIED BY THE ENGINEER. HARDENED CONCRETE MUST BE REMOVED FROM THE PROJECT LIMITS AND PROPERLY DISPOSED OF NO AWFOUT R/M (MISCELLANEOUS).

6. WHEREVER THE PHRASE "MAX" IS USED IN THIS PLAN, IT SHALL MEAN THE LIMITS OF.

7. THE RIGHT-OF-WAY SHOWN IN THE PLAN GIVES A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC LOCATION.

8. CONSTRUCTION DEPARTMENTS, IF REQUIRED, SHALL BE CONSIDERED HORIZONTAL, WITH NO ADDITIONAL COST. CONSTRUCTION DEPARTMENTS, IF REQUIRED, SHALL BE RESPONSIBLE FOR RETAINING ANY PERMITS AND COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.

9. THE CONTRACTOR SHALL COORDINATE THE WORK WITH OTHER CONTRACTORS IN THE CONSTRUCTION AREA INCLUDING PLANNED BUILDING APPROXIMATIONS AT THE WELLS FARGO CENTER WHICH INCLUDES EXTERIOR BUILDING AND LIMITED WORK.

GRADING, BASE, & SURFACE

1. EN.lightenment MATERIALS ARE Tumbled, ACIDS, SALT, SODA, AND ORGANIC OR OTHER UNSTABLE SUBSTANCES.

2. SELECT GRAINAR MATERIAL MOD. 7% IS DEFINED AS SELECT GRAINAR BORROW PER MODIFICATION SPECIFICATION SHALL MEAN SUCH THAT THE RATIO OF THE PORTION PASSING THE 120-MESH SCREEN DIVIDED BY THE PORTION PASSING THE 1-MESH SCREEN MAY NOT EXCEED 7 PERCENT BY MASS.

3. ALL GRAINAR MATERIALS SELECT GRAINAR MATERIAL OR SELECT GRAINAR MOD 7% OR ACIDIC BASE, SHALL BE COMPATIBLE WITH THE SPECIFIED COVER MATERIALS.

4. THE BOTTOM OF ALL EXCAVATIONS SHALL BE LEVEL AND COMPACTED.


6. THE CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL OUTSIDE THE PLANNED SUBSURFACE LIMITS UNTIL APPROVED BY THE ENGINEER.

7. PROVIDE A DRAINAGE WHERE PLACING NEW PAVEMENT AdjACENT TO THE PAVEMENT TO ENSURE A UNIFORM FINISH.

ELECTRICAL, CONDUIT AND MANHOLE NOTES

1. ALL CONDUIT AND MANHOLE INSTALLATION SHALL CONFORM TO THE APPROPRIATE WELD, SWG/MEC, AND MEC STANDARDS.

2. PROVIDE CONDUIT CONNECTIONS TO PROPOSED MANHOLE/VAULTS IN ACCORDANCE WITH MANHOLE/VAULT MANUFACTURER'S RECOMMENDATIONS.

3. INSTALL CONDUIT TO LOCATE TOP OF CONDUIT AT DEPTHS AS INDICATED ON DRAWINGS.

4. JOIN CONDUIT USING ADEQUATE, AS RECOMMENDED BY MANUFACTURER. MANUFACTURER POWER SHALL BE SUPPLIED ADEQUATELY.

5. CONTRACTOR SHALL NOT MANUFACTURE POWER TO OBTAIN ENTRY TO MANHOLE. MP PERSONNEL MUST BE ON SITE WHEN WORK IS PERFORMED IN MANHOLE.

UTILITIES

1. THE CONTRACTOR IS HIRRED FOR PAYMENT UNDER STATE LAW TO DEED ALL UTILITIES THAT MAY HAVE FACILITIES IN THE AREA. CONTRACT MUST BE MADE THROUGH CORNER STATE ONE-CALL.

2. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL, "D," THE UTILITY QUALITY LEVELS DETERMINED ACCORDING TO THE GUIDELINES OF CLASS B-30, ENTITLED "STANDARDS GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING EXCAVATION UTILITY DATA."

3. THE FOLLOWING UTILITIES HAVE FACILITIES WITHIN THE PROJECT LIMITS:
   - CENTRIPAL
   - CHAMBER
   - CLEARING COMMUNICATIONS
   - CLEARING
   - COMBINATION
   - CONGESTED UTILITIES (FORMERLY KNOWN AS MCCS)
   - DULUTH ENERGY SYSTEM
   - DULUTH POWER
   - NORTHERN TELEPHONE
   - Z:\DULUTH WATER

4. THE CONTRACTOR IS REQUIRED TO FULLY SUPPORT ANY EXISTING UTILITIES ENCOUNTERED DURING THE EXCAVATION TO PROTECT DAMAGE TO THE-INFRASTRUCTURE. ANY EXPOSED UTILITY SHALL BE REPAIRED IN PLACE OR AS REQUIRED BY THE FACILITY OWNER. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SUPPORT AND ELIMINATION OF INJURY REQUIREMENTS OF INJURY UTILITIES. ALL COST OF COORDINATING THE CONSTRUCTION OF THE WORK IN THE VENUE OF EXISTING UTILITIES TO REMAIN INCLUDING EXISTING SUPPORTING (REARING OR SPOONS), WORKING MACHINES, AND BACKFILL, SHALL BE CONSIDERED HORIZONTAL.

5. ANY ROADWAY SUBURBAN PIPE ENCOUNTERED DURING THE WORK THAT IS REMOVED TO CONSTRUCT THE WORK SHALL BE RETURNED TO THE SAME CONDITION AS ENCOUNTERED AT NO ADDITIONAL COST (HORIZONTAL).

6. WHERE RELOCATION OR INSTALLATION OF ROCKET TELEPHONE OR POWER TO ACCOMMODATE THE EXISTING UTILITY IS DEMONSTRATED IT SHALL NOT INCLUDE THE CONTRACTOR TO PAY FOR RELOCATION ON TRANSMISSION OR DEPARTMENTAL WORK AND MANHOLE AT EXISTING FACILITIES AS DESCRIBED IN NOTE 4 OF THIS SECTION.

STANDARD PLATES

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<td>1005C</td>
<td>TYPICAL TOWER BAR ASSORTMENT (2 SHEETS)</td>
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<td>DRAINAGE FOR WAREHOUSE (FOR USE IN ALL TRAFFIC AREAS) - CASTING NO. 719 AND 715</td>
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CITY STANDARD DETAILS

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CITY PROJECT NO. 1601

STANDARD PLATES & CONSTRUCTION NOTES

SHEET NO. 4 OF 49 SHEETS
KEY NOTES (APPLY TO ALL TYPICAL SECTIONS AS NOTED):

1. LITHE JOINT SHALL BE PROTECTED AT ALL TRANSVERSE JOINTS WHEN THE LITHE JOINT CONDUCTS TO EXISTING EARTHWORK AND MAY BE REQUIRED AT UTILITY CROSSINGS OR IF OTHER OBSTRUCTIONS ARE ENCOUNTERED, NO CHANGING DIRECTIONS OR MODIFICATIONS TO THE DUCT BANK SHALL BE PERMITTED REGARDLESS OF THE NUMBER OR TYPE OF SUCH MODIFICATIONS REQUIRED.

2. DUCT BANK SHALL BE CONSTRUCTED IN A 3-D ARRAYS (ROW X COL) RE-ARRANGEMENT OF THE DUCT BANK ARRAYS ARE REQUIRED AT CONNECTIONS TO EXISTING DUCT BANKS AND MAY BE REQUIRED AT UTILITY CROSSINGS OR IF OTHER OBSTRUCTIONS ARE ENCOUNTERED. NO CHANGING DIRECTIONS OR MODIFICATIONS TO THE DUCT BANK STEEL REAR EDGE REQUIRED.

3. CPLacement UTILITY LOCATIONS REFER TO PLANS.

4. CONCRETE ENCLOSURE SHALL CONSIST OF MIXED WITH EARLY STRENGTH CONCRETE COATINGS. CONCRETE ENCLOSURE SHALL REQUIRE CONCRETE STRENGTH 3000 PSI OR CONCRETE STRENGTH OF 5000 PSI, PREVENT UNBENDING OF THE ENCLOSURE, OR OTHER SAFETY REQUIREMENTS.

5. CONCRETE ENCLOSURE SHALL BE SECURED, SUPPORT AND MAINTAIN UNIFORM SPACING OF THE PIPE ASSEMBLY AND CHAINS SHALL PROVIDE A MINIMUM SPACING BETWEEN THE OUTER AND INNER WALLS OF THE CONCRETE ENCLOSURE. CONCRETE ENCLOSURE SHALL PROVIDE A MINIMUM SPACING BETWEEN CROSSSPACING CENTER TO CENTER.

6.حجر الرمل يمكن أن يزيل الرمل من النيازك. (Conduct Spacing & Materials Shall Meet Minimum NEC Requirements.)

7. 최적의 본질적 요구사항. ( ينبغ يتأخر عن الوقاية من الرياح.)

8. FINAL GRADES SHALL MATCH CASTING GRADES OR ELSEWISE NOTED ON THE PLANS.

9. PAYMENT FOR CONCRETE ENCLOSURES SHALL BE LIMITS TO REMOVAL, REPLACE MATERIAL, BETWEEN BORDERS OF INPLACE PAINTED AND BOTTOM OF PROPOSED SELECT GRANULAR BORDERS.

10. WHERE ABANDONMENT IS PERMITS OF THE CONTRACTOR’S OPERATIONS SUCH THAT COMPACTION OF BACKFILL TO THE SPECIFIED DENSITY CANNOT BE ACHIEVED, THE CONTRACTOR SHALL PROVIDE (SAME MIX BACKFILL (OCCIDENTAL).)

11. EXHAUST CONCRETE PAINTING (FULL DEPTH).

12. THE WATER MAIN CENTERLINE VARIES APPROXIMATELY 6 TO 8' OFFSET FROM MICHIGAN ST. ROADWAY CENTERLINE. PROPOSED WATER MAIN SHALL BE INSTALLED IN THE CENTERLINE WATER MAIN TRENDS. THE EXCLOSURE AND PROPOSED WATER ALIGNMENTS ARE A GRAPHICAL DEPICTION AND NOT TO BE USED FOR STAKING OR LAYOUT. ALL PERMANENT MARKINGS REQUIRED TO CONSTRUCT THE WATER MAIN TRENCH AND SECURE ENCLOSURE UTILITIES SHALL BE CONSIDERED INCIDENTAL REGARDLESS OF THE FIELD LOCATION OF THE WATER MAIN WITHIN THE APPROXIMATE 4' TO 8' CORRIDOR OFFSET.

13. FULLY SUPPORT AND PROTECT EXISTING UTILITIES TO REMAIN REFER TO UTILITY NOTES ON SHEET 4 AND SPECIAL SPECIFICATIONS.

INSET A
INPLACE CONCRETE PAINTING, NTS

INSET B(1)
PROPOSED CONCRETE PAINTING, NTS

TYPICAL DUCT BANK SECTION
APPLIES STA. 22+00 TO STA. 24+27
(Conduct Spacing & Materials Shall Meet Minimum NEC Requirements.)
PHASE 1 TEMPORARY WATER SERVICE SYSTEM

TEMPORARY WATER SERVICE SYSTEM STAGING REQUIREMENTS:
1. The contractor shall move with the city to ensure continued service to all buildings affected by the work.
2. Stages shall be completed sequentially. New water mains shall be tested and placed in service prior to subsequent stages being started.
3. Refer to special provisions for additional requirements.

TEMPORARY WATER SERVICE SYSTEM NOTES:
1. The contractor shall prepare a water plan including a schedule, product information and equipment list to the engineer for approval at least 14 days prior to start of installation of temporary water service.
2. The contractor shall attend a pre-installation meeting with the city of Duluth prior to the installation of the temporary water system.
3. Temporary water service shall be fully established for each water main construction stage prior to the construction of the new water mains.
4. The contractor shall be responsible for installing the temporary water service system as shown on the plan. The contractor shall take adequate steps to protect temporary water service lines during construction.
5. The temporary water system must meet the pressure and bacteria test requirements as specified in the City of Duluth Standard Construction Specifications Section 205.
6. Prior to making any segment of temporary water service pipe the ends shall be capped with water tight caps (exact size is not acceptable). If the pipe becomes contaminated with dirt or debris while being moved it shall be re-conditioned and retested for bacteria before being put into service.
7. The contractor shall provide two (2) emergency backup contact personnel for the temporary water system. The emergency contacts shall be available 24 hours a day, 7 days a week. If city of Duluth staff are called to the project site to perform the temporary water service system the contractor will be back charged the contact.
8. Temporary main shall be located along curb line to avoid conflict with pedestrian and vehicle conflicts. Where temporary mains cross active vehicle and pedestrian paths, the contractor shall provide vehicle and pedestrian accessible ramps to facilitate crossing.

KEY NOTES:
- Temporary water service is provided by self-digging building through internal building plumbing.
- Route temporary service through fireplace vault will provide temporary up and pedestrian ramp crossing.
- CTA center (2/4) W Superior street water service is provided by adjacent CTA center building (2/4 W Superior) through internal building plumbing.
- Route temporary service through building vault provide pedestrian ramp crossing.
- See sheet 1 for water service summary.

LEGEND
- (See temporary water construction details)
- Connect temporary main to existing hydrant
- Provide temporary water service connection
- Building water service supplied from Superior Street

GENERAL LAYOUT
TEMPORARY WATER SERVICE SYSTEM

Sheet No. 13 of 40 sheets
City Project No. 1601

BRAD SCOTT
Printed Name
06-23-11
Date
MICHIGAN ST. 3RD-1ST AVE. WEST
LHB Project No. 160811

CERTIFY that this plan specification or report was prepared by me in my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
TEMPORARY WATER SERVICE SYSTEM STAGING REQUIREMENTS:

1. The contractor shall work with the city to ensure continued service to all buildings affected by the work.
2. Stages shall be completed sequentially. New water mains shall be tested and placed in service prior to subsequent stages being started.
3. Refer to special provisions for additional requirements.

TEMPORARY WATER SERVICE SYSTEM NOTES:

1. The contractor shall provide a written plan including a schedule, product information, and equipment list to the engineer for approval at least 14 days prior to installation of temporary water service.
2. The contractor shall attend a pre-installation meeting with the city of Duluth prior to the installation of the temporary water system.
3. Temporary water service shall be provided by the city of Duluth in accordance with the contract. The temporary water service shall be provided to the construction site as shown on the plans. The contractor shall agree to protect temporary water service lines during construction.
4. The temporary water system must meet the pressure and bacteria test requirements as specified in the City of Duluth Standard Construction Specifications Section 2054.
5. Prior to installing any segment of temporary water service pipe the lines shall be capped with water proof caps (duct tape is not acceptable) if the pipe becomes contaminated with dirt or debris while being moved it shall be re-connected and retested for bacteria before being put into service.
6. The contractor shall provide two (2) emergency backup contact persons. For the temporary water system, emergency contacts shall be available 24 hours a day, 7 days a week. If city of Duluth staff are called to the project site to activate the temporary water service system the contractor will be charged.
7. Temporary water mains shall be located along curb line to avoid conflict with pedestrian and vehicle conflicts. Where temporary mains cross active vehicle and pedestrian paths, the contractor shall provide vehicle and/or pedestrian access ramps to facilitate crossing.

KEY NOTES:

1. See Sheet 15 for Water Service Summary.
3. Contractor shall plan that the temporary connection will be inside the building. Coordinate with owner.

PHASE 2 TEMPORARY WATER SERVICE SYSTEM

LEGEND

M1 PROVIDE TEMPORARY WATER SERVICE CONNECTION (SEE TEMPORARY WATER CONSTRUCTION DETAILS)
M10 CONNECT TEMPORARY MAIN TO EXISTING HYDRANT (CONNECT TO BOTH HOSE NOZZLES OR PUMP NOZZLE TO PROVIDE ADEQUATE FLOWS)

GENERAL LAYOUT

TEMPORARY WATER SERVICE SYSTEM

SHEET NO. 14 OF 40 SHEETS
### Water Services

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<tr>
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**Temporary Service Connection**

- Temporary PC Service Main
- Temporary PC Service Branch
- Temporary Service Stabilizer

Notes:
- All AHD, piping, and material to provide work as shown in the draw shall be considered to be included for rough in the lump sum pay per temporary service connection.

CONSTRUCTION DETAILS

- Temporary Water Service System
- Sheet No. 15 of 49 Sheets
- Michigan St, 3rd-1st Ave West
- LWR Project No. 1601
- City Project No. 1601

Brad Scott

02-03-17

MICHIGAN ST. 3RD-1ST AVE WEST

LWR PROJECT NO. 16011

CITY PROJECT NO. 1601

CONTRACTOR TO PROVIDE THROT BUILDING AND RESTRAINT AS REQUIRED TO SECURE TEMPORARY SERVICE CONNECTION.
TRAFFIC CONTROL NOTES

1. The contractor shall furnish, install, and maintain the devices in this traffic control plan unless otherwise noted.
2. All traffic control devices shall conform to the Minnesota manual on uniform traffic control devices (MUTCD) including "Temporary Traffic Control Zone Layouts" dated January 2014, available at [link].
3. Field conditions may require modification of the layout as deemed necessary by the engineer.
4. The number and placement of traffic control devices will depend upon the issuance of the contractor’s operation.
5. All distances depicted are approximate.
6. The contractor is responsible for protecting any work areas from traffic in accordance with the MUTCD.
7. If the contractor decides to perform the construction work in a sequence other than shown in this traffic control plan, the contractor must provide adequate traffic control plans to be approved by the engineer.
8. All traffic control devices that are not consistent with traffic control operations shall be controlled, removed, or repositioned as directed by the engineer.
9. "Road work ahead" signs shall be removed according to AASHTO A492-79 (2013) standards in advance of the contractor and shall have a type "S" low-intensity flashing amber warning light mounted in each.
10. Road closed to thru traffic" signs shall be installed on type "S" barricades and shall be located at a point in the street so as to permit local traffic but effectively disconnect from traffic flow.
11. When a "road closed to thru traffic" sign is used, the "stop" or "yield" sign at that intersection shall be left in place or moved to a "safety location" where the driver can see the sign.
12. "Road closed to thru traffic" signs may be used where the roadway is closed to all traffic except contractor's equipment or officially authorized vehicles.
13. Type "S" low-intensity amber warning lights shall be mounted on all advance warning signs along the right lane and type "S" barricades with lights used at night to identify barriers.
14. Additional training for personnel responsible for implement the barriers shall be in accordance with temporary traffic control plan.
15. The contractor shall have in the possession of the project engineer a copy of the "Traffic Control Plan" and a traffic control zone layout.
16. The contractor shall have in the possession of the project engineer a copy of the "Traffic Control Plan" and a traffic control zone layout.
17. The contractor shall not place presence barrier or barriers adjacent to any drop offs or open locations within 15 ft of a work zone or traffic barrier.
18. For comparison of Michigan Street to 2nd Ave traffic, the contractor shall observe no-parking signs from City of St. Paul and 2nd Ave as noted in the plans and avoid parking zones and other locations as needed to keep street clear.

TRAFFIC CONTROL PHASING

The phases of work described for traffic control directly correlate with the phases identified in the project. Temporary traffic control system plans and the temporary traffic control zone layouts shall be consistent with this traffic control plan.

The following primary scope of work shall be completed under each phase (refer for special provisions under temporary traffic control and designs for design and engineering input requirements):

PHASE 1: Installation of utilities and pavement restoration from 2nd Ave west to 2nd Ave and Associated closures of 2nd Ave between Superior Street and Michigan Street under construction staging.

PHASE 2: Installation of utilities and pavement restoration from 2nd Ave west to 2nd Ave and Associated closures of 2nd Ave between Superior Street and Michigan Street under construction staging. Phase 2 also includes closure of Michigan Street at Minnesota Avenue for spot concrete surfacing repairs.

G SERIES

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KEY NOTES:

1. TEMPORARY US BANK PARKING RAMP ENTRANCE. SEE CONSTRUCTION DETAILS ON SHEET 34.

2. SEE SHEET 23 FOR TEMPORARY ROAD CLOSURE DETAILS.

3. PROVIDE TEMPORARY TWO-WAY TRAFFIC PER TRAFFIC CONTROL DETAILS.

4. SECOND AVE WEST TO BE CONVERTED TO ONE-WAY (UPHILL) DURING PHASE 2.

LEGEND:

- APPROXIMATE PHASE 2 WORK AREA

- PHASE 2 MICHIGAN ST. DETOUR ROUTE

- TRAFFIC FLOW ARROW

- TRAFFIC FLOW ARROW - PARKING RAMP

PHASE 2
CONSTRUCTION PRACTICES TO MINIMIZE STORM WATER CONTAMINATION

1. All areas that are under grinds must be kept in a smooth condition to allow sheet flow of storm water whenever practical and always before application of sprayable or non-sprayable blankets, mulch, or other protective cover.

2. A stabilized construction entrance/exit will be constructed to remove tracking of sediments on the project right-of-way.

3. All non-hazardous waste materials will be collected and stored in a securely lidded metal dumpster or other approved containment methods at the end of each day. Any alternative to a metal dumpster must be submitted in writing for approval by the project engineer. All trash and construction debris from the site will be deposited in the dumpsters. Debris material will be removed as necessary to function as debris collection. All construction materials will be buried on-site, and the contractor's erosion control supervisor will instruct all personnel regarding the correct procedure for disposal.

4. A licensed sanitary waste management contractor will collect all sanitary waste from the portable units at a rate necessary to maintain desired function.

5. All vehicles on site will be monitored for laws and recent periodic preventive maintenance to reduce the chance of leakage.

6. Fertilizers will be stored in a covered shed and partially used bags will be transferred to a secured bin to reduce the chance of spillage.

7. Petroleum products will be stored in totally sealed containers, when clearly labeled.

8. Spill kits will be included with all fueling sources and maintenance activities. Secondary containment measures will be installed and maintained by the contractor.

9. Any asbestos substances used on site will be applied in accordance with manufacturer's recommendations.

10. All paint containers and paint components will be tightly sealed and stored where not required for use. Excess paint components are not to be discarded in the storm water system but are to be properly disposed of according to manufacturer's instructions.

11. Material and equipment necessary for spill clean-up will be kept in an enclosed trailer or shed on site. Equipment will include, but not be limited to; brooms, sponges, misc. tool boxes, water bottles, and disposal equipment.

12. All spills will be cleaned-up immediately upon discovery, spills large enough to reach the storm water conveyance system will be reported to the manufacturer daily after (400) 422-0708.

13. Concrete trucks will not be allowed to wash out or deposit concrete or dirt waste water on the site. All trucks not in use will be properly disposed of and will not be allowed to wash out or discharge water in the storm water conveyance system. The concrete system must include sink holes for this project facility. The water system will be equipped with concrete culverts to direct any discharge from concrete washout potential to waters of the state during a minimum of a 72-hour clean-up.

14. Falling debris not used on concrete work must be applied for any fall hazard. Activities not to be dissected into concrete for concrete potential to waters of the state during a minimum of a 72-hour clean-up.

15. Activities from additional operations that are subject of sediment (e.g. Silt) shall be designed to any temporary sediment basins constructed on the side to prevent treatment disposal to a water of the state. If basin are not feasible, basins will be dispossessed over natural rock riprap, sheeting, plastic or other direct dispersion measures.
SANITARY CASTING DETAIL

SAN-1

REVIEWED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE

STORM MANHOLE CASTING

STRM-1

REVIEWED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE
NOTES:
1. COMPONENT NET'S: FRAME 5050, GRADE B8E (STD. PLATE 41540).
2. MATERIAL: GRAY CAST IRON ASME A-126, CLASS 250.
3. WEIGHT: FRAME 20#; GRADE 121#.
4. ALL CATCH BASINS SHALL BE STAMPED, "NO DUMPING LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

CATCH BASIN CASTINGS
STRM-3

REVIEWED/APPROVED 1/8/2016
CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE

GUTTER STAMP
STRM-7

REVIEWED/APPROVED 2/21/2013
CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE
1. TYPICAL PERMANENT WATER SERVICE CONNECTION (4" AND LARGER)
1. WH-281 BUTTERFLY DIAGRAM

NOT TO SCALE

WORK TO BE DONE

DUCT BANK CONDUITS (5)
1. CUT 0.75 X 0.25" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
2. INSTALL (5) GRIP COATED RIGID DUCTS INTO THE CONCRETE WITH 4"
   MOUNTING EMBRACES USING MELT M-100-10 INJECTABLE MORTAR OR APPROVED CEMENT.
3. PLACE (5) 0.75" DIA. PVC DUCTS IN THE HOLE.
4. USE 4000 PVC CONCRETE TO ENGAGE THE NEW DUCTS.

KEY NOTES:
1. PAID FOR AS "CONNECT INTO EXISTING ELECTRICAL MANHOLE" BY EACH FOR CONNECTING (5) CONDUITS AS SHOWN.
**MH-21 BUTTERFLY DIAGRAM**

**NOT TO SCALE**

**WORKS TO BE DONE**

1. REMOVE ALL LOOSE/SPALLED CONCRETE TO SOLO CONCRETE.
2. REMOVE ALL CORROSION/NOSE FROM EXPOSED REBAR SURFACES.
3. COAT EXPOSED REBAR WITH SEA ANTIAC 100 FRACTION OR APPROVED EQUIVALENT EPOXY TO ALL EXPOSED REBAR SURFACES.
4. CLEAN ALL EXPOSED CONCRETE SURFACES OF DUST/SANDING.
5. USE SEA STRUCTURAL CONCRETE VUX OR APPROVED EQUAL TO FILL ALL SPALLED CONCRETE AREAS.

**DUTY党工委达**

1. CUT 20" X 20" HOLE IN THE EAST & WEST CONCRETE WALLS, AND 20" X 20" HOLE IN THE SOUTH CONCRETE WALL. REMOVE ALL LOOSE CONCRETE.
2. INSTALL 4" EPOXY COATED REBAR DOCKS INTO THE CONCRETE WITH 4" MINIMUM EMERGENCE USING HELP HIT-RES-500 IN INELECTIVE WATERS OR APPROVED EQUAL.
3. PLACE 6" X 6" DIA. CONCRETE FORMS IN THE EAST & WEST HOLES, AND PLACE 6" X 6" DIA. PVC CONDUITS IN THE SOUTH HOLE.
4. USE 4000 PSI CONCRETE TO ENSURE THE NEW CONCRETS.

**KEY NOTES:**

1. SHALL BE INCLUDED FOR PAYMENT UNDER THE SINGLE LUMP SUM PAY ITEM, "REPAIR ELECTRICAL MANHOLE - 21".
2. PADD FOR "CONNECT INTO EXISTING ELECTRICAL MANHOLE" BY THE EAC-1 FOR CONNECTING (6) CONDUITS AS SHOWN.
3. PADD FOR "CONNECT INTO EXISTING ELECTRICAL MANHOLE" BY THE EAC-1 FOR CONNECTING (4) CONDUITS AS SHOWN.
4. SEE TYPICAL CONNECTION DETAIL ON SHEET 41.
1. MH-23 WEST WALL CONNECTION DETAIL

2. MH-23 EAST WALL CONNECTION DETAIL

KEY NOTES:
1. Poured in “CONNECT INTO EXISTING ELECTRICAL ANCHOR” BY THE EACH FOR CONNECTING (6) CONDUIT AS SHOWN.
2. SEE TYPICAL CONNECTION DETAIL ON SHEET 4E.

WORK TO BE DONE:

1. CUT 36 IN. DIA. HOLE IN THE EXIST CONCRETE WALL & REMOVE ALL ANCHOR CONCRETE.
2. INSTALL #6 STEEL COATED PIGEON BOLTS INTO THE CONCRETE WITH 4" MINIMUM EMERGOUS USING 1400-5000 V II INJECTABLE MORTAR OR APPROVED EQUIVALENT.
3. PLACE 6-6" DIAMETER PVC CONDUITS IN THE HOLE.
4. USE 4000 PSI CONCRETE TO EXCAVATE THE NEW CONDUITS.
1. REMOVE ALL LOOSE/SPALLING CONCRETE TO SOLID CONCRETE.
2. REMOVE ALL CORROSION/REPAIR FROM EXPOSED REBAR SURFACES.
3. COAT EXPOSED REBAR WITH SHA AMANTEC 900 EPOXY OR APPROVED EQUIVALENT EPOXY TO ALL EXPOSED REBAR SURFACES.
4. CLEAN ALL EXPOSED CONCRETE SURFACES OF DUST & DEBRIS.
5. USE PIGTAiled STRUCTURAL CONCRETE DRY OR APPROVED EPOXY TO FILL ALL SPALLED CONCRETE, ARMS.

KEY NOTES:
1. SHALL BE INCLUDED FOR PAYMENT UNDER THE SINGLE Lump SUM PAY ITEM, "REPAIR ELECTRICAL MANHOLE - 24".

MH-24 BUTTERFLY DIAGRAM

NOT TO SCALE

WORK TO BE DONE:
1. MH-25 BUTTERFLY DIAGRAM

WORK TO BE DONE

1. REMOVE ALL LOOSE/SPALLED CONCRETE TO SOLID CONCRETE.
2. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
3. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
4. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
5. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
6. INSTALL ALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.

DRAINAGE FILLER ①

1. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
2. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
3. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
4. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.
5. INSTALL 3/4" X 3/4" HOLE IN THE EAST CONCRETE WALL & REMOVE ALL LOOSE CONCRETE.

KEY NOTES:

1. SHALL BE INCLUDED FOR PAYMENT UNDER THE SINGLE LUMP SUM PAY ITEM, "REPAIR ELECTRICAL WAREHOUSE - 25".
2. PIERCE PROOF "CONNECT INTO EXISTING ELECTRICAL MANDATE" BY THE EACH FOR CONNECTING (4) CONDUITS AS SHOWN.
3. SEE TYPICAL CONNECTION DETAIL OR SHEET 4.
4. INSTALL 6 - 6" PVC CONDUIT (①)

2. MH-25 WEST WALL CONNECTION DETAIL

NOT TO SCALE