Erosion Control Notes:

1. **WEED STANDARD SPECIFICATIONS FOR CONSTRUCTION SHALL APPLY.** Along with the (A) City of Duluth or (B) Developer, the Contractor will be co-responsible for the BMPs for storm water construction permit for this project – contractors signature on permit is required.

1.1. Submit initial erosion control (EC) schedule at or before the preconstruction conference.

1.2. Submit EC schedule alterations/adjustments weekly thereafter for Engineer's approval.

2. The contractor is responsible for erosion control quality control (QC) on this project. Contractor shall be responsible for preparing a plan for the minimum erosion control at the construction site:

4.1. Erosion control blankets shall be used on all slopes 1:3 or steeper.

4.2. Silt fences shall be used in conjunction with other erosion BMPs.

4.3. Stockpiles or pads, or approved equal, are to be used to reduce erosion velocities and reduce erosion of storm flow.

4.4. Storm inlet and outlet areas shall be continuously protected with approved approved device/methods.

4.5. Stabilized construction entrance or resistant mud mats shall be used to reduce sediment tracking.

4.6. Permanent vegetation will be established right after topsoil is spread.

4.7. Control all site solid waste, debris, material storage, and concrete waste on site. No migration of water or debris/storm systems permitted.

5. All slopes and cutlines shall be stabilized prior to opening new culverts into existing drainage ways.

6. If any stockpile is to remain in place for more than 3 days, sediment and erosion controls shall be used.

7. Water pumped or otherwise discharged from the site during construction (dewatering) shall be directed through effective filtering devices in accordance with approved specification 2523. Use of approved fluorocarbons is unnecessary.

8. The contractor shall take all possible precautions to prevent appreciable soil tracking on roadsides, chip/wood mulch, or debris washed, tracked, or deposited onto paved surfaces shall be removed prior to the end of each work day.

9. Stabilized construction entrances shall be removed and area restored after grading is complete.

10. The contractor QC program shall ensure that a competent individual inspect erosion and sediment control devices weekly and after each rain event. All nonfunctional devices shall be repaired and/or replaced.

11. Maintain written log of all weekly and rain event inspections – include the corrective actions that were taken.

12. The contractor shall maintain the capability to implement rapid stabilization method 4 instant 2523.4 at all times. Includes cat III erosion control blankets (CIB) in American System 5150 or approved equivalent. (CIB) along with seed mixture, fertilizer, and soil at specified per 2523-3,2. The upgrade end of each blanket strip shall be buried at least 6 inches in a vertical check out. Seed mixtures shall be placed at grade and throughout the blanket at a maximum spacing in all directions of 2 feet. Payment allowed shall be per contract or in absence of contract bid price in accordance with approved specification 2523.

13. The contractor shall be proactive in their approach to minimizing soil erosion and sediment transport from the site. Current technology for weather forecasting and weather radar allows for the contractor to adjust BMPs installed and functioning for a rain event. All construction sites shall be prepared for a rain event during non-work times, i.e., week nights and weekends.

14. As site conditions change, the work progresses and weather conditions vary, the contractor shall be reactive to these changing variables, therefore BMP installation, cleaning and relocation should be anticipated in most construction activities.

15. CONSTRUCTION PRACTICES TO MINIMIZE STORM WATER CONSTRUCTION TO PREVENT STORM WATER CONTAMINATION FROM OCCURRING, THE FOLLOWING BMPS WILL BE IMPLEMENTED:

1. All areas that are rough graded must be kept in a smooth condition to allow sheet flow of storm water. Where practical and always ready for surface application of dispensable or non-dispersible blankets. Mulch, or other protective covers.

2. A stabilized construction entrance/exit will be constructed to reduce vehicle tracking of sediments off the project right of way.

3. All solid waste materials will be collected and stored in a securely lidded metal dumpster or other approved containment method 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 dumpster. The dumpster will be emptied as necessary to function as intended for debris collection. No construction materials will be buried on-site. The contractor's erosion control supervisor will instruct all personnel regarding the correct procedure for disposal.

4. All recyclable materials will be separated on-site and segregated in designated containers.

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

6. All vehicles on site will be monitored for leaks and receive regular preventive maintenance to reduce the change of leaks.

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

8. Petroleum products will be stored in tightly sealed containers, which are clearly labeled.

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

10. Any asphalt-based materials used on site will be applied in accordance with manufacturers recommendations.

11. All paint containers and curing compounds will be tightly sealed and stored when not required for use. Excess paint will not be disposed of the storm water system but will be properly disposed of according to manufacturer's instruction.

12. Materials and equipment necessary for spill clean-up shall be readily available and be kept in an enclosed trailer or shed on site. Equipment will include, but not limited to, brooms, mops, dust pans, bags, gloves, sockets, absorbent, (e.g., oil absorptive boxes and sponges), and buckets.

13. All spills will be contained and cleaned up immediately upon discovery. Spills large enough to reach the storm water conveyance system will be reported to the Regional Office of the Duluth National Office at 1-800-422-0798.

14. Concrete trucks will not be allowed to wash out or discharge surplus concrete or storm water on the site unless done in an engineered containment system. The engineered system must include site drawings for the project file and written assurance that the system will work as designed and leave no discharge of concrete or concrete residue potential to enter waters of the state.

15. Form release or used for concrete work must be applied over a pallet containing absorbent to collect excess liquid. The absorbent material will be replaced and properly disposed of when saturated.

16. Discharges from basins containing operations that are turbed or sediment laden will be discharged to temporary sediment basins constructed on site to provide treatment prior to discharge to a water of the state.
**CONSTRUCTION NOTES:**
- CONSTRUCTION SHALL BE GOVERNED BY THE MN DOT STANDARD SPECIFICATIONS, CITY OF DULUTH STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP AND THE INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL BMPs BEFORE AND DURING CONSTRUCTION.
- THE CONTRACTOR SHALL KEEP WRITTEN INSPECTION AND MAINTENANCE LOGS (INCLUDING ALL CLEAN OUT AND CORRECTIVE ACTIONS) IN ACCORDANCE WITH THIS SWPPP AND ALL PERMITS.

**IMPLEMENTATION PLANS CONCERNING SWPPP REQUIREMENTS**
- NO IMPLMENTATION PLANS CURRENTLY EXIST FOR THE RECEIVING WATERS ON THIS PROJECT.
- THE ST. LOUIS RIVER IS LOCATED 77 MILES FROM THE PROJECT AND IS AN MPCA LISTED IMPACTED WATER.

**LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN**

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<thead>
<tr>
<th>DESCRIPTION</th>
<th>TITLE</th>
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<tr>
<td>SUMMERY OF PERVERS &amp; IMPERVIOUS</td>
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<td>SHEET 3</td>
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<td>RECEIVING SURFACE WATERS</td>
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<td>SHEET 3</td>
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<td>DRAINAGE STRUCTURES</td>
<td>EROSION CONTROL</td>
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**SWPPP IMPLEMENTATION CONTACTS**

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>PERMIT</th>
<th>NAME</th>
<th>PHONE/E-MAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPCA</td>
<td>NPDES</td>
<td>JIM DEXTER</td>
<td>(218)529-6253 <a href="mailto:james.dexter@pcs.state.mn.us">james.dexter@pcs.state.mn.us</a></td>
</tr>
<tr>
<td>SWCD</td>
<td>WCA</td>
<td>RC BOHEIM</td>
<td>(218)723-4629 <a href="mailto:RC.Boheim@southstlouiswcd.org">RC.Boheim@southstlouiswcd.org</a></td>
</tr>
<tr>
<td>MNDRN WATERS AREA HYDROLOGIST</td>
<td>N/A</td>
<td>PATRICIA FOWLER</td>
<td>(218)834-6621 <a href="mailto:patricia.fowler@dnr.state.mn.us">patricia.fowler@dnr.state.mn.us</a></td>
</tr>
<tr>
<td>CORPS OF ENGINEERS</td>
<td>SECTION 404</td>
<td>DARYL WIERZBINSKI</td>
<td>218-834-6630 <a href="mailto:daryl.w.wierzbinski@mvpw02.uea.ce.army.mil">daryl.w.wierzbinski@mvpw02.uea.ce.army.mil</a></td>
</tr>
<tr>
<td>STATE DUTY OFFICER</td>
<td>N/A</td>
<td>MPCA</td>
<td>800-422-0798</td>
</tr>
<tr>
<td>CITY REVIEW</td>
<td>N/A</td>
<td>TOM JOHNSON</td>
<td>(218) 730-5103 <a href="mailto:tjohnson@duluthmn.gov">tjohnson@duluthmn.gov</a></td>
</tr>
<tr>
<td>LGU-CITY OF DULUTH</td>
<td>N/A</td>
<td>KYLE DEMING</td>
<td>(218) 730-5580 <a href="mailto:kdeming@duluthmn.gov">kdeming@duluthmn.gov</a></td>
</tr>
<tr>
<td>CITY OF DULUTH SOLID WASTE OFFICER</td>
<td>N/A</td>
<td>KAREN OODONELL</td>
<td>(218) 730-5148 <a href="mailto:kodonnell@duluthmn.gov">kodonnell@duluthmn.gov</a></td>
</tr>
</tbody>
</table>

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE: TIM A. SANDERS

DATE: JULY 8, 2016

CITY OF DULUTH ENGINEERING DIVISION 411 W. 15TH ST. STE 211 DULUTH, MN 55802

GAS MAIN INSTALLATION FOR CIRRUS EXPANSION CITY PROJECT NO.: 1551 STATE AID PROJECT NO.: N/A DRAUGHT BY: KLM SWPPP SHEET NO. 3 OF 26
ALL STEEL & 4" AND LARGER PE GAS MAIN BEDDING DETAIL

REvised/Approved 1/8/2016

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE

STREET RESTORATION OVER TRENCH

REvised/Approved 1/8/2016

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE
TYPICAL SECTION
HANES ROAD

- 3.1' 4% 1' 6" CURB & GUTTER
- 1" TACK COAT
- 2" Type SP 9.5 Wearing Course Mix (SPW9.5/4DCC)
- 1-1/2" Type SP 12.5 Non-Wearing Course Mix (SPW12.5/4DCC)
- 8" Type SP 12.5 Non-Wearing Base Course Mix (SPW12.5/3DCC)
- 5" Aggregate Base (CV) CL5 (SPEC 2211)
- 12" Select Granular Borrow (CV) SPEC 2105 (Modified 7%)

ALL DITCH BOTTOMS AND TOPS OF BACKSLOPES ARE TO BE ROUNDED.
NOTES:
- CONTRACTOR TO POTHOLE ALL UTILITY CROSSINGS, INCIDENTAL
- ALL GAS MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING
- GAS MAIN SHALL HAVE A MINIMUM OF 4' OF COVER FROM STA 14+00 TO STA 34+37 AND A MINIMUM OF 3' OF COVER FROM STA 34+37 TO 73+53

SCALE IN FEET

INSTALL 6" PE HDPE

APPROXIMATE GRADE ABOVE Pipe

OPEN CUT
STA 15+47 TO 16+47
INSTALL LINE MARKER

INSTALL 6" PE HDPE

INSTALL 6" PE 90° BEND
STA 16+22

GAS MAIN INSTALLATION FOR CIRRUS EXPANSION
CITY PROJECT NO.: 1551
STATE AID PROJECT NO.: N/A
CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802
DRAWN BY: KLM
PLN & PROF

SHEET NO. 15 OF 26
NOTES:
- CONTRACTOR TO POTHOLE ALL UTILITY CROSSINGS, INCIDENTAL.
- ALL GAS MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING UNLESS OTHERWISE NOTED ON PROFILE.
- GAS MAIN SHALL HAVE A MINIMUM OF 4'-0" OF COVER FROM STA 1+00 TO STA 34+37 AND A MINIMUM OF 3'-0" OF COVER FROM STA 34+37 TO 73+53.

OPEN CUT
STA 21+07 TO 21+97
INSTALL LINE MARKER

INSTALL 6" PE 45° BEND
STA 21+32

INSTALL 6" PE 45° BEND
STA 24+00

APPROXIMATE GRADE ABOVE PIPE

INSTALL 6" PE HPG

12" CI WATERMAIN

8" CI WATERMAIN

6" CI WATERMAIN

12" PVC SWG

3" PE HPG
NOTES:
- CONTRACTOR TO POTHOLE ALL UTILITY CROSSINGS, INCIDENTAL
- ALL GAS MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING
  UNLESS OTHERWISE NOTED IN PROFILE
- GAS MAIN SHALL HAVE A MINIMUM OF 4' OF COVER FROM STA 1450 TO STA 34+37 AND A MINIMUM OF 3' OF COVER FROM STA 34+37 TO 72+53

LOCATING INSIDE THE AIRPORT
FENCE MUST BE DONE BETWEEN
11:00 PM AND 5:00 AM

INSTALL 6" PE HPD

APPROXIMATE GRADE ABOVE PIPE

INSTALL 6" PE HPD

TIM A. SANDERS, P.E.
SIGNATURE

DATE: JULY 9, 2016
NOTES:
- CONTRACTOR TO POTHOLE ALL UTILITY CROSSINGS, INCIDENTAL.
- ALL GAS MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING UNLESS OTHERWISE NOTED IN PROFILE.
- GAS MAIN SHALL HAVE A MINIMUM OF 4' OF COVER FROM STA 36+00 TO STA, 34+37 AND A MINIMUM OF 3' OF COVER FROM STA 34+37 TO 72+53

INSTALL 6" PE 90° BEND
---
INSTALL LINE MARKER
---
OPEN CUT STA 34+38 TO 34+63
---
INSTALL 6" PE 90° BEND STA. 34+38
---
CHANGE GAS BURY DEPTH FROM 3' TO 4'
---
APPROXIMATE GRADE ABOVE PIPE
---
INSTALL 6" PE HPG
NOTES:
- CONTRACTOR TO POPTHOLE ALL UTILITY CROSSINGS, INCIDENTAL.
- ALL GAS MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING.
- GAS MAIN SHALL HAVE A MINIMUM OF 6" OF COVER FROM STA 1+00 TO STA 34+37 AND A MINIMUM OF 3' OF COVER FROM STA 34+37 TO 73+53.

- INSTALL 8" PE HPG
- INSTALL 6" PE HPG
- APPROXIMATE GRADE ABOVE PIPE
- OPEN CUT STA 65+28 TO 65+76 INSTALL LINE MARKER
- 3" PE HPD
- 6" PE BEND
- 8" DI WATERMAIN
- PROPERTY LINE GREGORY CARLSON

DULUTH ENGINEERING DIVISION
411 M. 1ST ST. STE 211
DULUTH, MN 55802
CITY PROJECT NO.: 1551
STATE AID PROJECT NO.: N/A
SHEET NO. 25 OF 26

HEIRS OR ESTATE OF GREGORY CARLSON
SIGNED BY: DULUTH CITY
DATE: JULY 8, 2016
TIM A. SANDERS, P.E.
LC NO.: 50401

GAS MAIN INSTALLATION FOR CIRRUS EXPANSION
DRAWN BY: KLM
PLAN & PROFILE