Purchasing Division
Finance Department

Room 120
411 West First Street
Duluth, Minnesota 55802

218-730-5340
purchasing@duluthmn.gov

Addendum 4
Solicitation 23-99776
GANC Connector Trail, Snowmaking & Lighting

This addendum serves to notify all bidders of the following changes to the solicitation documents:

1. Attached are the specifications for the mechanical package.
2. Valve Station 2 has been removed from Add Alternate 5 since it has already been constructed. The bid form has been updated.
3. Base Bid #3 Item No. 2 Lighting Assemblies refers to the cost of providing and installing the lighting assembly.
4. Base Bid #3 Item No. 6 Lighting Assembly Power Connection refers to the cost to connect power to the installed lighting assemblies.
5. Add Alternate 3 Item No. 3 Underground Snowmaking Ped. Power does not include pedestals. Pedestals are listed in Add Alternate 5 Item No. 2.
6. Add Alternate 4 No. 4 Electric Service Package and VH-3 Feeder refers to the installation of underground portion of power supply for Valve House 3.
7. Add Alternate 6 Item No. 3 Valve House #3 Electrical Package and Item No. 4 Electric Service Gear Package refers to the above ground portion of power supply for Valve House 3.
8. Add Alternate 6 Item No. 5 Valve House #3 Building refers to the valve house structure (concrete slab, walls roof etc.)
9. The snowmaking system piping is intended to be installed above ground.
10. Section 26 00 01 Certification Page Heading: Strikethrough “#6” so that revised heading is “2023 Bid Addendum – 11/29/23”

Please acknowledge receipt of this Addendum by checking the acknowledgement box within the www.bidexpress.com solicitation.

Posted: **12/1/23**

SPECIFICATIONS
FOR
SNOWMAKING PIPING INSTALLATION

SPRIRT MOUNTAIN NORDIC CENTER, MN

SPECIFICATION # 852615-100

JULY 05, 2017

1.0 GENERAL

2.0 SCOPE

3.0 PROJECT INSTALLATION REQUIREMENTS

4.0 MATERIALS

PREPARED BY

TORRENT Engineering & Equipment

406 E. Bell Dr.
Phone: (574)-372-3200

Warsaw, IN 46582
Fax: (574)-372-3229

USA
www.torrentee.com

IN COOPERATION WITH

FOSTER JACOBS & JOHNSON, INC.
LISTEN + PLAN + DESIGN + EXECUTE©

1.0 GENERAL

1.1 This specification describes the requirements for installation of piping and associated equipment for the snowmaking system at Spirit Mountain Nordic Center, Duluth, MN.

1.2 Warranty shall be a minimum of 12 months from date of installation completion and customer acceptance.

1.3 Contractors with at least 5 years experience in the installation of this type of materials and equipment are preferred.

1.4 Manufacturer names and types are used to establish standards for technical requirements and quality. All products quoted must be of equal quality, performance and construction.

1.5 Alternate recommendations will be accepted at the time of quotation in an addition to the specified materials and equipment, provided the intent of the system (both present and future) is met.

1.6 Reference – Pipeline layout # 852615-M1.

1.7 See FJJ drawings and specifications for snow making machine trail electrical design and layout.

2.0 SCOPE

2.1 Provide materials and install piping for snowmaking system. Installation includes; piping, fittings, valves, and hydrants.

2.2 Installation bid to include all materials and labor, including any incidentals such as hydrant drain bed materials.

2.3 Quotations to be submitted in a unit pricing format, such as $/linear foot or $/each, in order to make adjustments for actual installed quantities.

2.0 SCOPE CONTINUED

2.4 Piping – Supply and install the following;

1. Piping;
    1. Approximately 10,320 ft. of 4” to 10” diameter uncoated (bare steel) above ground welded steel water distribution piping. Piping to be installed on the cross country 3.3 K trail network. Scope begins at the 10” stub out tie in point to the Spirit Mountain Ski Area snowmaking system, reference point 1 on the drawing.
    2. See drawing 852615-M1 for pipeline layout and pipe size table.
    3. See materials section 4.1 for additional details.

2. Tie-in piping at points as shown on the drawings.
    1. Ref. Pt. 1 - Spirit Mountain Ski Area snowmaking system

3. Piping system isolation valve stations VS1, VS2, and VS3 at drawing reference pts. 2, 4, and 7. See drawing for details.

4. Piping system end of line drains at drawing reference pts. 5, 6, 6A, 7B, and 8. See drawing for details.

5. Piping system low point drain assembly at drawing reference pt. 3. See drawing for details.

6. All piping is to be installed on top of the ground (above ground).
   Except piping between points 1-2 to be deep buried below frost (freeze proof).
   Install piping to limit low points to drain locations only, reference points 3, 6, 6A, 7.

7. All pipe welding to be performed by qualified welders and according to specification API 1104.

8. Contractor to verify pipeline trench route and all hydrant locations.

9. Supply and install standard weld type pipeline fittings as shown on the drawings. Utilize standard weld fittings for all pipeline transitions that would otherwise cause pipeline kinking without a fitting (15 degree maximum without fitting).

   See materials section 4.2 for additional details.

2.5 Hydrants – Supply and install the following water hydrants;

(45) Water hydrants – 2” x 3 ft. nominal length deep bury type
See materials section 4.3 for additional details.

2.6 Snow machine trail electrical;

See FJJ drawings and specifications. One each 60A/3 pedestal installed adjacent to each water hydrant. 480V/3 wiring adjacent to piping.

2.7 Contractor is responsible for locating all underground utilities throughout the project area.

3.0 PROJECT INSTALLATION REQUIREMENTS

3.1 Pipeline Installation

All piping is steel line pipe per piping material specification.

- Unload pipe from trucks at delivery site. Visually inspect for defects and/or damage.

- Move pipe to designated storage area.

- Move pipe to installation area. Cover opened ends with weld cap before dragging to prevent any debris from entering the pipe. Visually inspect inside of pipe for debris (dirt, rocks, etc) and remove before joining sections. Contractor to insure all pipelines are free from debris.

- Join sections of pipe. Pipe may be joined in strings before moving into final placement. Allowable method of joining pipe is welding. Any other methods are not acceptable. Pipe to be supplied in 40 ft double random lengths with beveled ends for welding, unless other arrangements are approved. Any persons performing welding are to be certified pipeline welders.

- Set pipe strings in final pipeline alignment location. Pipeline is to rest on undisturbed or properly compacted earth, and no sharp rocks or other objects. Join strings during final installation.

- Pipeline tie-ins. All pipeline junctions are to be joined together with standard weld type fittings. Long radius elbows are to be used at sharp bends. Trim standard 45 and 90 degree elbows when required to obtain non standard angles. Junction tees and reducers may not be replaced by “stub-ins”.

- Any deviation from the specification must be approved.

3.2 Hydrant Installation

Quantity of hydrants – see section 2.5 above.

Installation as follows –

- Cut hole in the water pipeline for threadolet or offset elbow clearance. Do not allow cut piece to drop into pipeline.

- For direct mount hydrants; plumb vertically and weld a 2” diameter FNPT outlet extra heavy steel half coupling or 3000# steel threadolet to the pipeline, one per water hydrant.

- Install 2” x close XH threaded steel pipe nipple into threadolet.

- Install swing joint and water hydrant.

- Use Rectorseal No. 5 pipe thread sealant or equal on all threaded joint connections.

3.0 PROJECT INSTALLATION REQUIREMENTS CONTINUED

3.3 System flush and pressure testing;

Piping system to be flushed with water to insure there is no debris in the pipelines.

Completed water piping system to be pressure tested to insure system is leak free. Pressure testing is to be performed after installation of piping and hydrants. Piping system to be pressurized with water from the snowmaking system. Contractor to supply any additional equipment required to perform the pressure testing. If the system is found not to maintain pressure and leakage is indicated, contractor is responsible for locating and repairing any leaks, and then re repeating the pressure testing until satisfactory results are obtained.

Completed snow gun electrical system to be tested to insure the system functional and passes any applicable inspections. See FJJ specifications for details.

4.0 MATERIALS

4.1 STEEL LINE PIPE

4.1.1 Steel Pipe (3” nominal diameter and larger);

- Use - Snowmaking distribution mountain piping system
- Service - Cold Water
- Specification - API 5L , Grade B (minimum)
- Thickness, sizes and quantity - As noted on the drawings.
- New black steel pipe, domestic
- ERW - Electric resistance welded
- Double random lengths (+/- 40’)
- Beveled ends for welding unless otherwise specified.
- Markings - Paint stenciled; mfg, specification, grade, diameter, wt/ft or wall thickness.
- Inspection by customer at delivery.

4.0 MATERIALS CONTINUED

4.1 STEEL LINE PIPE CONTINUED

4.1.2 Steel pipe (2 ½" nominal diameter and smaller);

- Use - Snowmaking distribution mountain piping system
- Service - Cold Water
- Specification - ASTM A-120, Grade B (minimum)
- Thickness, sizes and quantity - As noted on the drawings.
- New black steel pipe, domestic
- ERW - Electric resistance welded
- Double random lengths (+/- 40')
- Beveled ends for welding unless otherwise specified.
- Markings - Paint stenciled; mfg, specification, grade, diameter, wt/ft or wall thickness.
- Inspection by customer at delivery.

Substitutions on specification, grade, or thickness are not permitted without engineering approval.

4.1.3 Pipeline Coatings;

If specified, piping is to be externally coated with a multipurpose thermosetting two part epoxy coating, for buried or immersion service, slip-bore and directional drilling and also excavated trench applications, 3M Scotchkote 323 or equal.

Pipe is to be shot-blasted to SSPC-SP10 near white metal conditions and coated per NAPCA bulletin 12-78-04. Coating applied to an average minimum dry thickness of 12 – 15 mils.

4.0 MATERIALS CONTINUED

4.2 PIPELINE FITTINGS

4.2.1 Weld Fittings

- Specification - ASTM 234
- Standard weight schedule (unless otherwise specified) per ANSI B36.10
- Grade B carbon steel
- Beveled ends for welding (30 deg. bevel)
- Dimensions, tolerances, markings and weld bevel per ANSI B16.9
- Pressure and temperature ratings equal to seamless pipe of equal size, wall and material grade.
- All elbows to be long radius type unless otherwise specified.
- Markings - size, wall thickness designation, mfg., grade
- Domestic preferred

4.2.2 Steel Flanges

- Forged carbon steel
- Rating - As specified on drawings
- Manufacture Specification;

  Class 150 & 300 rated per ASTM A181, grade I

  Class 400 & 600 rated per ASTM A105, grade I

  Class 900 rated per ASTM A105, grade II
- Pressure ratings, dimensions and tolerances per ANSI B16.5
- Raised face
- Slip on type (except where other type is specifically noted).
- Gaskets; flat ring type with corresponding flange pressure rating.

4.0 MATERIALS CONTINUED

4.2 PIPELINE FITTINGS CONTINUED

4.2.3 Threaded Fittings

- Specification – ASTM A105, Forged Steel
  ASTM A197, malleable iron
- Pressure/Temperature ratings and dimensional tolerances per ANSI B16.3 (to 3" size)
- Threaded to NPT specifications
- Class 150 (Std.), Class 300 (XH), or FS as specified
- Unions - ANSI B16.39 specification
- Finish - Black unless otherwise specified
- Galvanizing - per ANSI A 153 (if specified).

4.3 HYDRANTS

4.3.1 Water Hydrants

- Type - Freeze proof, self-draining
- Service - Cold water throttling
- Rating - 800 psig minimum non shock working pressure rated
- Capacity - 200 gpm minimum at full opened condition and 250 psi inlet pressure.
- Inlet - 2" female NPT
- Outlet – 2" diameter NPT, orientation 90 deg. from inlet. With 2" male camlock type quick connect fitting attached, brass or hard coat aluminum. PT coupling or equal.
- Stand pipe - 2" diameter, schedule 40 API 5L grade B (or better) steel pipe, galvanized.
- Length - 2 feet (stand pipe length)
- General - Self draining water hydrant with automatic drain valve(s) installed. All castings to be free from defects. Packings to be adjustable and replaceable at outlet housing. Design to prevent operating shaft creep during throttling operation. Each hydrant to be tested before shipment for leakage. Hydrant plug and operating rod assembly to be removable from top of hydrant for service without excavation.
- Water hydrants to be Rogers model R200HP-2-I20-O20-M.

4.0 MATERIALS CONTINUED

4.3 HYDRANTS CONTINUED

4.3.1 Hydrant installation fittings

- Weld fittings – Forged steel thread-o-let (3000# rated) or half coupling.
- Threaded fittings – Per specification 4.2.3 above.

APPENDIX

- Piping layout and details, # 852615-M1.

End of Specification

852615-100 Spirit Mtn CC Piping Installation Spec 7-05-17.doc

BASE BID 1 - 0.8K LOOP

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	BASE BID 1 QUANTITY	UNIT PRICE	BASE BID 1 TOTAL
1	2021.501	MOBILIZATION	LUMP SUM	0.5		
2	2101.505	GRUBBING	ACRE	2.5		
3	2105.501	COMMON EXCAVATION	CU YD	2251		
4	2105.604	GEOTEXTILE FABRIC TYPE V	SQ YD	308		
5	2112.603	SUBGRADE PREPARATION	LIN FT	0		
6	2118.507	AGGREGATE SURFACING (CV) CLASS 5	CU YD	49		
7	2411.000	NATURAL STONE RETAINING WALL	LIN FT	476		
8	2501.502	12" CS PIPE APRON	EACH	6		
9	2501.502	15" CS PIPE APRON	EACH	0		
10	2501.502	18" CS PIPE APRON	EACH	12		
11	2501.502	24" CS PIPE APRON	EACH	2		
12	2501.502	30" CS PIPE APRON	EACH	0		
13	2501.503	12" CP PIPE CULVERT (SMOOTH)	LIN FT	170		
14	2501.503	15" CP PIPE CULVERT (SMOOTH)	LIN FT	0		
15	2501.503	18" CP PIPE CULVERT (SMOOTH)	LIN FT	380		
16	2501.503	24" CP PIPE CULVERT (SMOOTH)	LIN FT	50		
17	2501.503	30" CP PIPE CULVERT (SMOOTH)	LIN FT	0		
18	2511.507	RANDOM RIPRAP CLASS IV	CU YD	244		
19	2557.602	TRAIL GATE, TYPE SPECIAL	EACH	0		
20	2563.601	TRAFFIC CONTROL	LUMP SUM	0.5		
21	2573.502	CULVERT END CONTROLS	EACH	10		
22	2573.503	SILT FENCE, TYPE MS	LIN FT	1350		
23	2573.503	SEDIMENT CONTROL LOG TYPE COMPOST	LIN FT	270		
24	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	0		
25	2575.501	SEEDING	ACRE	2.5		
26	2575.502	SEED MIXTURE TYPE 36-311	LB	83.75		
27	2575.604	ROLLED EROSION PREVENTION CATEGORY 25	SQ YD	2720		

BASE BID 2 - 2.0K CONNECTOR

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	BASE BID 2 QUANTITY	UNIT PRICE	BASE BID 2 TOTAL
1	2021.501	MOBILIZATION	LUMP SUM	0.5		
2	2101.505	GRUBBING	ACRE	6.4		
3	2105.501	COMMON EXCAVATION	CU YD	2666		
4	2105.604	GEOTEXTILE FABRIC TYPE V	SQ YD	792		
5	2112.603	SUBGRADE PREPARATION	LIN FT	2080		
6	2118.507	AGGREGATE SURFACING (CV) CLASS 5	CU YD	126		
7	2411.000	NATURAL STONE RETAINING WALL	LIN FT	1224		
8	2501.502	12" CS PIPE APRON	EACH	2		
9	2501.502	15" CS PIPE APRON	EACH	6		
10	2501.502	18" CS PIPE APRON	EACH	4		
11	2501.502	24" CS PIPE APRON	EACH	6		
12	2501.502	30" CS PIPE APRON	EACH	4		
13	2501.503	12" CP PIPE CULVERT (SMOOTH)	LIN FT	70		
14	2501.503	15" CP PIPE CULVERT (SMOOTH)	LIN FT	155		
15	2501.503	18" CP PIPE CULVERT (SMOOTH)	LIN FT	110		
16	2501.503	24" CP PIPE CULVERT (SMOOTH)	LIN FT	215		
17	2501.503	30" CP PIPE CULVERT (SMOOTH)	LIN FT	190		
18	2511.507	RANDOM RIPRAP CLASS IV	CU YD	304		
19	2557.602	TRAIL GATE, TYPE SPECIAL	EACH	2		
20	2563.601	TRAFFIC CONTROL	LUMP SUM	0.5		
21	2573.502	CULVERT END CONTROLS	EACH	11		
22	2573.503	SILT FENCE, TYPE MS	LIN FT	6277		
23	2573.503	SEDIMENT CONTROL LOG TYPE COMPOST	LIN FT	695		
24	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	2		
25	2575.501	SEEDING	ACRE	6.4		
26	2575.502	SEED MIXTURE TYPE 36-311	LB	214.4		
27	2575.604	ROLLED EROSION PREVENTION CATEGORY 25	SQ YD	7000		

BASE BID #3 - Loop 1 Lighting

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	BASE BID 3 QUANTITY	UNIT PRICE	BASE BID 3 TOTAL
1	NA	MOBILIZATION	LUMP SUM	1		
2	NA	LIGHTING ASSEMBLIES	EACH	41		

3	NA	LIGHTING CONTROL - INSTALLATION ONLY	LUMP SUM	41		
4	NA	PROVIDE AND INSTALL METAL POLE	EACH	10		
5	NA	PROVIDE AND INSTALL WOOD POLE	EACH	31		
6	NA	LIGHTING ASSEMBLY POWER CONNECTIONS	LUMP SUM	41		

Add Alternate 3 - Loop 2 Underground power

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	ADD ALT. # 3 QUANTITY	UNIT PRICE	ADD ALT. #3 TOTAL
1	NA	MOBILIZATION	LUMP SUM	1		
2	NA	UNDERGROUND LIGHTING POWER	LUMP SUM	22		
3	NA	UNDERGROUND SNOWMAKING PED. POWER	LUMP SUM	12		

Add Alternate 4 - Loop 3 Underground power

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	ADD ALT. # 4 QUANTITY	UNIT PRICE	ADD ALT. #4 TOTAL
1	NA	MOBILIZATION	LUMP SUM	1		
2	NA	UNDERGROUND LIGHTING POWER	LUMP SUM	17		
3	NA	UNDERGROUND SNOWMAKING PED. POWER	LUMP SUM	12		
4	NA	ELECTRIC SERVICE PACKAGE AND VH-3 FEEDER	LUMP SUM	10		

Add Alternate 5 - Loop 2 Aboveground Snowmaking power

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	ADD ALT. # 5 QUANTITY	UNIT PRICE	ADD ALT. #5 TOTAL
1	NA	MOBILIZATION	LUMP SUM	1		
2	NA	ABOVEGROUND SNOWMAKING PEDISTAL	EACH	12		
3	NA	PIPING - 8"	FEET	900		
4	NA	PIPING - 6"	FEET	1070		
5	NA	PIPING - 4"	FEET	990		
6	NA	HYDRANTS	EACH	11		
7	NA	FITTINGS	LUMP SUM	1		
9	NA	LOW POINT DRAINS (PTS 10, 10A, 12)	EACH	3		

Add Alternate 6 - Loop 3 Aboveground Snowmaking power

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	ADD ALT. # 6 QUANTITY	UNIT PRICE	ADD ALT. #6 TOTAL
1	NA	MOBILIZATION	LUMP SUM	1		
2	NA	ABOVEGROUND SNOWMAKING PEDISTAL	EACH	12		
3	NA	VALVE HOUSE #3 ELECTRICAL PACKAGE	LUMP SUM	1		
4	NA	ELECTRIC SERVICE GEAR PACKAGE	LUMP SUM	1		
5	NA	VALVE HOUSE #3 BUILDING	LUMP SUM	1		
6	NA	PIPING - 6"	FEET	1540		
7	NA	PIPING - 4"	FEET	1300		
8	NA	HYDRANTS	EACH	13		
9	NA	FITTINGS	LUMP SUM	1		
10	NA	VALVE STATION - VS3 / Pt 8	EACH	1		
11	NA	DRAINS (PTS 8B, 8D)	EACH	2		

Add Alternate 7 - Loop 2 Aboveground Lighting Systems

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	ADD ALT. # 7 QUANTITY	UNIT PRICE	ADD ALT. #7 TOTAL
1	NA	MOBILIZATION	LUMP SUM	1		
2	NA	LIGHTING ASSEMBLIES	LUMP SUM	22		
3	NA	LIGHTING CONTROL - INSTALLATION ONLY	LUMP SUM	22		
4	NA	PROVIDE AND INSTALL METAL POLE	EACH	5		
5	NA	PROVIDE AND INSTALL WOOD POLE	EACH	17		
6	NA	LIGHTING ASSEMBLY POWER CONNECTIONS	LUMP SUM	22		

Add Alternate 8 - Loop 3 Aboveground Lighting Systems

ITEM NO.	MNDOT SPEC NO.	DESCRIPTION	UNIT	ADD ALT. # 8 QUANTITY	UNIT PRICE	ADD ALT. #8 TOTAL
1	NA	MOBILIZATION	LUMP SUM	1		
2	NA	LIGHTING ASSEMBLIES	LUMP SUM	17		
3	NA	LIGHTING CONTROL - INSTALLATION ONLY	LUMP SUM	17		
4	NA	PROVIDE AND INSTALL METAL POLE	EACH	4		
5	NA	PROVIDE AND INSTALL WOOD POLE	EACH	13		
6	NA	LIGHTING ASSEMBLY POWER CONNECTIONS	LUMP SUM	17		