CITY OF DULUTH
DEPARTMENT OF PARKS AND RECREATION

SITE LOCATION
PROJECT LOCATION MAP
NOT TO SCALE

CONSTRUCTION PLANS FOR:
HARTLEY PARK
TRAIL IMPROVEMENTS

PLAN SYMBOLS
PROPERTY LINES
EXISTING CONTOUR LINES
ONE FOOT INTERVAL
TRAIL CONSTRUCTION TYPE
"A" CENTER LINE OF
PROPOSED TRAIL
- GAZEBO POINT

CORRIDOR
TRAIL CONSTRUCTION TYPE
"A" CENTER LINE OF
PROPOSED TRAIL CORRIDOR
HARTLEY NATURE CENTER TO
HARTLEY POND

SITE LOCATION
PROJECT LOCATION MAP
NOT TO SCALE

KEY PLAN
NOT TO SCALE

GOVERNING SPECIFICATIONS
THE 2008 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL APPLY.
AVAILABLE AT: http://www.dot.state.mn.us/hs4017/specification.html

ALL TRAFFIC CONTROL, DIVIIONS AND MARKINGS SHALL CONFORM TO THE MINIMUM, INCLUDING THE FIELD MANUAL, DATED JANUARY 2014.
AVAILABLE AT: http://www.dot.state.mn.us/mn出版物/fieldmanuals/ver7.html

THE 2015 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT "STANDARD CONSTRUCTION SPECIFICATIONS AND SUPPLEMENTS OR ADDENDA" SHALL APPLY.
ALL PLANS SHALL BE THE GOVERNING SPECIFICATIONS.

INDEX

Sheet No.
L-1

Description
TITLE SHEET INDEX MAP

1-1
TRAIL LOCATOR MAP

1-2
TYPICAL TRAIL CROSS SECTIONS

1-3
TYPICAL TRAIL CROSS SECTIONS

1-4
TRAIL ALIGNMENT DETAILS

1-5
EROSION CONTROL DETAILS

1-6
HMC TO THE POND TRAIL PLANS

1-7
GAZEBO POINT TRAIL PLANS

THIS PLAN CONTAINS 10 SHEETS
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A LEGAL LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

Luke W. Sydow
LANDSCAPE ARCHITECT (TYPE OR PRINTED NAME)

4/17/2018
DATE

403-520-2955

LANDSCAPE ARCHITECT

APPROVED BY
PARKS MANAGER

CITY APPROVAL

APPROVED CITY OF DULUTH PROJECT NO.

DRAWN BY: LWS
SHEET NO. 1 OF 9
TRAIL CONSTRUCTION NOTES:

1. All trails shall be constructed in accordance with the specifications and the "Typical Trail Cross Section and Trail Cross Section Types A, B & C" as shown on sheet L-3 & L-4, Trail Alignment Plans L-5 and other requirements and details on sheets L-7 through L-10.

EXISTING DATA NOTES:

Existing topographic information is based on one foot interval LIDAR data provided by St. Louis County that was flown the the spring of 2015.

All other existing conditions are "traced" from aerial photography. They are not to be considered accurate and are provided as a convenience to the contractor.

It is the responsibility of the contractor to field verify existing conditions and notify owner of any discrepancies prior to commencing work.
TYPICAL TRAIL DESIGN CROSS-SECTION

NOT TO SCALE

TYPICAL TRAIL DESIGN NOTES:
1. THE GRAPHIC ON THIS SHEET ILLUSTRATES A TYPICAL TRAIL CROSS-SECTION HIGHLIGHTING TREAD AND VEGETATION CLEARANCE ZONE WIDTHS.
2. THE TRAIL WIDTH AND VEGETATION CLEARANCE ZONE WIDTHS MAY BE MODIFIED BY THE OWNER IN RESPONSE TO PARTICULAR SITE CONDITIONS.
3. SEE SPECIFICATIONS FOR FURTHER DETAILS ON TREAD AND CORRIDOR CLEARING AND TYPICAL TRAIL DESIGN CROSS-SECTIONS
4. SEE SHEET L-4 AND SPECIFICATIONS FOR RECOMMENDED BEST MANAGEMENT PRACTICES FOR EROSION CONTROL MEASURES.
5. AFTER COMPLETION OF ALL GRADING, THE TRAIL TREAD SHALL BE MECHANICALLY COMPACTION USING A VIBRATORY PLATE, SHEEP'S FOOT, OR OTHER APPROVED EQUAL COMPACTOR.
6. CUT BRUSH AND SLASH MUST BE DISPOSED IN AN UPLAND LOCATION AND MUST BE KEPT OUT OF STREAMS, GULLIES, SWALES, WETLANDS, AND LOW AREAS. SEE SPECIFICATIONS FOR DETAILS.
7. NO EXCAVATION OR FILL PERMITTED IN WET & LOWLAND AREAS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSULT WITH THE OWNER PRIOR TO DOING ANY WORK WITHIN SUSPECTED WET & LOWLAND AREAS.

TRAIL BIDDING NOTES:
1. TREE REMOVAL, STUMP REMOVAL, BRUSH REMOVAL, AND LIMB TRIMMING IS INCLUDED IN THE CONTRACTOR'S UNIT BID PRICE FOR TRAIL CONSTRUCTION TYPES "A, B & C". (SEE SPECIFICATION FOR FURTHER DETAILS)
2. TRAIL TREAD GRADING AND COMPACTING IS INCLUDED IN THE CONTRACTOR'S UNIT BID PRICE FOR TRAIL CONSTRUCTION TYPES "A, B & C". (SEE SPECIFICATION FOR FURTHER DETAILS)
3. PUSHING ASIDE ROCKS OR FRACURED STONE ENCOUNTERED WHILE GRADING THE TRAIL IS INCLUDED IN THE CONTRACTOR'S UNIT BID PRICE FOR ALL TRAIL CONSTRUCTION TYPES. (SEE SPECIFICATIONS FOR FURTHER DETAILS)
4. GRADING THROUGH LOW SPOTS, FLATTER AREAS, EARTHEN PILES, MISCELLANEOUS DEBRIS, AND FALLEN WOODY MATERIALS IS INCLUDED IN THE CONTRACTOR'S UNIT BID PRICE FOR TRAIL CONSTRUCTION. (SEE SPECIFICATIONS FOR FURTHER DETAILS)
5. ALL TURNS NOT DEFINED AS A BERM OR SWITCHBERM ARE TO BE INSLOPED TURNS AS SPECIFIED. INSLOPED TURNS ARE INCLUDED IN THE CONTRACTOR'S UNIT BID PRICE FOR TRAIL CONSTRUCTION TYPES "A, B & C". (SEE SPECIFICATIONS FOR FURTHER DETAILS)
6. GRADE REVERSALS ARE REQUIRED AT A MINIMUM EVERY 100 LF. GRADE REVERSALS ARE INCLUDED IN THE CONTRACTOR'S UNIT BID PRICE FOR TRAIL CONSTRUCTION TYPES "A, B & C". (SEE SPECIFICATIONS FOR FURTHER DETAILS)
FIELD MEASUREMENT NOTES:

1. Measurement and payments for trail construction type is based on the slope averages as depicted in the trail alignment section of this plan set and in the trail slope analysis map (found in the specs).

2. Trail types and quantities are provided as a convenience to the contractor. It is the responsibility of the contractor to verify field quantities and notify the owner of any discrepancies prior to commencing work.

CONSTRUCTION NOTE:

1. Partial bench cut is allowed when done properly with a downhill retaining wall and compacted backfill. Refer to page 158 of (Trail Solutions: IMBA's Guide to Building Better Singletrack).

2. Grading through low spots, flatter areas, earthen piles, landslides, miscellaneous debris, and fallen woody materials is included in the contractor's unit bid price for trail construction types "A, B & C". (See specifications for further details)

3. Contractor is expected to create frequent grade reversals regardless of the local landscape. This may require localized topography modifications including but not limited to raised tread, borrow pits and bumps when building through landscapes with low slope angles and flatter areas such as type "A" trail.

4. Unless shown on specific details the outrun shall be constructed as below.

NOTE:
Contractor cannot invoice for both trail construction, types A, B & C, and constructed features of a given linear foot of trail.

TYPICAL TRAIL CROSS-SECTIONS (A-C TRAIL TYPES)

1. Type "A" (low sideslopes): 3% - 5% sideslopes
2. Type "B" (medium sideslopes): 10% - 20% sideslopes
3. Type "C" (high sideslopes): 31%+ sideslopes

NOT TO SCALE
Flagging:
In this project, the centerline of a 50' wide trail corridor has been drop-flagged by the Owner. The plans and specifications are based on this trail corridor. Final trail design is the responsibility of the Contractor within this corridor. Corridor is marked with blue hanging flags.

The trail should have a grade reversal a minimum of every one-hundred feet (100'). Trail should follow a rolling contour alignment and abide by the Half Rule.

NOTES:
PLAN SHEETS L-7 THROUGH L-9 ILLUSTRATE THE APPROXIMATE CENTER OF A 50-FOOT WIDE CORRIDOR FOR TRAIL CONSTRUCTION, WHICH ARE PROVIDED TO ESTABLISH AN OVERALL TRAIL LAYOUT PLAN AND TO ESTIMATE OVERALL LINEAL FEET OF TRAIL.
CONSTRUCTION NOTE:
BACKFILL BEDDING MATERIAL SHALL BE 3” - 6” CRUSHED ROCK. THE SAME CRUSHED ROCK CAN BE UTILIZED FOR FILL BETWEEN THE SET ROCK/STONE.

10” MINIMUM ROCK/STONE SET DEPTH. SEAMS RUNNING IN THE DIRECTION OF TRAVEL SHALL BE MINIMIZED IN BOTH LENGTH AND WIDTH. SEAM WIDTH SHALL BE MINIMIZED AND SEAM STAGGERING SHALL BE USED WHERE POSSIBLE.

NOTICE:
ROCK CHECKS TO BE USED IN AREAS OF CONCENTRATED FLOW
4” TO 12” DIA. STONE AT 8” TO 12” DEEP

2'-0" DITCH CHECK SPACING
FOR MULTIPLE OR SERIES OF CHECKS THE BOTTOM OF UPPER CHECK SHOULD BE SAME ELEVATION AS THE TOP OF THE LOWER CHECK TO PROVIDE FOR POOLING

SECTION VIEW

ROCK CHECK DETAIL

EROSION CONTROL NOTES:
1. ALL DISTURBED AREAS NOT PART OF ACTIVE TREAD TO BE STABILIZED WITHIN 7 DAYS OF NOT BEING WORKED.
2. WHENEVER POSSIBLE USE NATIVE DUFF MATERIALS FOUND IN THE TRAIL CORRIDOR AS A MULCH FOR COVERING SOIL EXPOSED BY BACKSLOPE AND DOWNSLOPE CUTS. WOOD CHIPS MADE FROM WOODY MATERIAL CLEARED AS A RESULT OF THE CORRIDOR CLEARING ARE AN ACCEPTABLE ALTERNATIVE TO NATIVE DUFF MULCH.
3. FOR SLOPE ANGLES UNDER 3:1 USE TEMPORARY EROSION CONTROL SEED MIX AND FOR DISTURBED AREAS THAT ARE LACKING ADEQUATE NATIVE DUFF MATERIAL.
4. FOR SLOPE ANGLES 3:1 AND OVER USE PERMANENT EROSION CONTROL SEED MIX AND EROSION CONTROL BLANKET FOR LAND SLIDE AREAS AND AREAS OF HIGH STABILITY. THESE AREAS MUST BE APPROVED BY THE OWNER.
5. SEED SHALL BE A NATIVE WOODLAND AND NATIVE MEADOW MIX.
6. AFTER COMPLETION OF ALL GRADING, THE TRAIL TREAD SHALL BE MECHANICALLY COMPACTED TO ITS SPECIFIED WIDTH USING A VIBRATORY PLATE, SHEEP’S FOOT, OR OTHER APPROVED EQUAL COMPACTOR.
7. CUT BRUSH AND SLASH MUST BE DISPOSED IN AN UPLAND LOCATION AND MUST BE KEPT OUT OF STREAMS, GULLIES, SWALES, WETLANDS, AND LOW AREAS. SEE SPECIFICATIONS FOR DETAILS.
8. NO EXCAVATION OR FILL PERMITTED IN WET & LOWLAND AREAS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSULT WITH THE OWNER PRIOR TO DOING ANY WORK WITHIN SUSPECTED WET & LOWLAND AREAS.

WOOD FIBER BLANKET DETAIL

COIR ROLL DETAIL

NOT TO SCALE

Erosion Control Blanket: Category 3:
FOR DISTURBED AREAS WITH SLOPES BETWEEN 3:1 and 2:1, COVER WITH CATEGORY 3 EROSION CONTROL BLANKET CONSISTING OF 100% COIR FIBER ROILS A MINIMUM OF 6” DIAMETER. BOUNDARY HIGHLIGHTING 2” X 2” TWISTED CORRUGATION – ROILS SHALL BE PLACED PERPENDICULAR TO THE FLOW OF WATER AND SHALL BE IN DIRECT CONTACT WITH THE SOIL AND BOUNDARY HIGHLIGHTING.

Category 4:
FOR DISTURBED AREAS WITH 2:1 SLOPES OR OVER, COVER WITH CATEGORY 4 EROSION CONTROL BLANKET CONSISTING OF 50% COCONUT/50% STRAW BLEND, SUCH AS WESTERN EXCELSIOR, EXCELSIOR 12/2, WITH ALL NATURAL NETTING (OR APPROVED EQUAL) MEETING THE MND SPECIFICATION SECTION 3850 REQUIREMENTS.

Anchors
Anchors shall be used at top of all slopes and every 12’ LF of slope. The erosion control blanket shall be placed in a 6” TRENCH, STAPLED IN PLACE AND BACKFILLED WITH SOIL AND COMPACTED. BLANKET SHALL BE OVERLAPPED A MINIMUM OF 6” AS SHOWN ABOVE THE BLANKET AND Secured with staples.

EROSION CONTROL BLANKET:

Anchor Trench Section Detail

Cross-Section Detail

Ditch Check Spacing

NOTE:
PAYMENT FOR ROCK CHECKS WILL BE ON A SQUARE YARD BASIS.
TRAIL SURFACE - 5'-0" WIDE
3:1 SLOPE
3:1 SLOPE
NEW 6" COMPACTED CRUSHED LIMESTONE ACCESSIBLE TRAIL SURFACE - COMPACTED IN TWO LIFTS
EXISTING TRAIL SURFACE.
SLOPE &, CONDITION VARIATES.
REGRADE AS NEEDED TO ESTABLISH A SMOOTH, SURFACE WITH MINIMAL CROSS-SLOPE.
COMPACT.
BACKSLOPE AT 3:1.
MEET EXISTING GRADE
EXISTING TRAIL SURFACE - 3' to 8' WIDE
EXISTING GRADE - FIELD VERIFY.
FEATHER GRADE INTO ADJACENT LANDSCAPING
BACKSLOPE AT 3:1.
MEET EXISTING GRADE
3% SLOPE MAX
A STANDARD TRAIL "B" IMPROVEMENTS - SECTION
STANDARD TRAIL "B" IMPROVEMENTS - SECTION
1. ± 1,110 LF OF RE-BUILT TRAIL TO SPECIFIED 5'-0" WIDE SECTION
2. ± 320 LF OF NEW TRAIL BUILT TO SPECIFIED SECTION AT 1:20 (5%) MAXIMUM SLOPE TO 0'-0" WIDE
3. CONTRACTOR MAY SALVAGE CLEAN LIMESTONE FROM EXISTING TRAIL AREAS TO BE RELOCATED
4. TOPSOIL AND SEED ALL AREAS OF RELOCATED TRAIL.
5. SUBMIT SAMPLE OF PROPOSED CRUSHED LIMESTONE TRAIL SURFACING MATERIAL FOR APPROVAL PRIOR TO INSTALLATION.

EXISTING DATA NOTES:
EXISTING TOPOGRAPHIC INFORMATION IS BASED ON ONE FOOT INTERVAL LIAR DATA PROVIDED BY ST LOUIS COUNTY THAT WAS FLOPPED THE SPRING OF 2015.

ALL OTHER EXISTING CONDITIONS ARE "TRACED" FROM AERIAL PHOTOGRAPHY. THEY ARE NOT TO BE CONSIDERED ACCURATE AND ARE PROVIDED AS A CONVENIENCE TO THE CONTRACTOR.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS AND NOTIFY OWNER OF ANY DISCREPANCIES PRIOR TO COMMENCING WORK.

ADDITIONAL EROSION CONTROL BEST MANAGEMENT PRACTICE (BMP) MEASURES MAY NEED TO BE IMPLEMENTED FOR AREAS OVER 1:1 AND WILL BE PAID BASED ON THE CONTRACTORS UNIT BID PRICE FOR BMP'S.
LANDINGS SHALL BE 5'-0"X5'-0"
MINIMUM (TYP.)

SLOPE SHALL NOT EXCEED 1:15 (TYP.)

LANDING NOT TO EXCEED 2.0% IN ANY DIRECTION (TYP.)

LANDING NOT TO EXCEED 2.0% IN ANY DIRECTION

RE-BUILD EXISTING TRAIL TO 5'-0"
WIDTH WITH 2.0% CROSS SLOPE. EXISTING BOARDWALKS TO REMAIN.

LANDING LOCATIONS TO BE SPACED 50'-0" APART, MAXIMUM

APPROXIMATE LOCATION OF NEW TRAIL. TRAIL NOT TO EXCEED 1:15 AND SHALL HAVE LANDINGS AS REQUIRED TO MEET UNIVERSAL DESIGN REQUIREMENTS.

REMOVE EXISTING LIMESTONE TRAIL. ADD TOPSOIL, SEED AND EROSION CONTROL MAT AS NEEDED.

LANDINGS SHALL BE 5'-0"X5'-0"
MINIMUM (TYP.)

HARTLEY POND DAM

TISCHER CREEK
TRAIL CONSTRUCTION NOTES - GAZEBO POINT:

1. ALL TRAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE TYPICAL TRAIL CROSS SECTION AND TRAIL CROSS SECTION TYPES "A & B" AND OTHER REQUIREMENTS AND DETAILS ON SHEETS L-3 THROUGH L-5.