Item 6E.
BCWMC 9-19-13

MAIN STEM OF BASSETT CREEK RESTORATION PROJECT

MINNEAPOLIS PARK & RECREATION BOARD

CONSTRUCTION PLAN FOR STREAMBANK STABILIZATION AND HABITAT RESTORATION ALONG BASSETT CREEK

GOLDEN VALLEY ROAD EXTENDING SOUTH APPROXIMATELY 15,000 FEET TO IRVING AVENUE

PLAN SYMBOLS

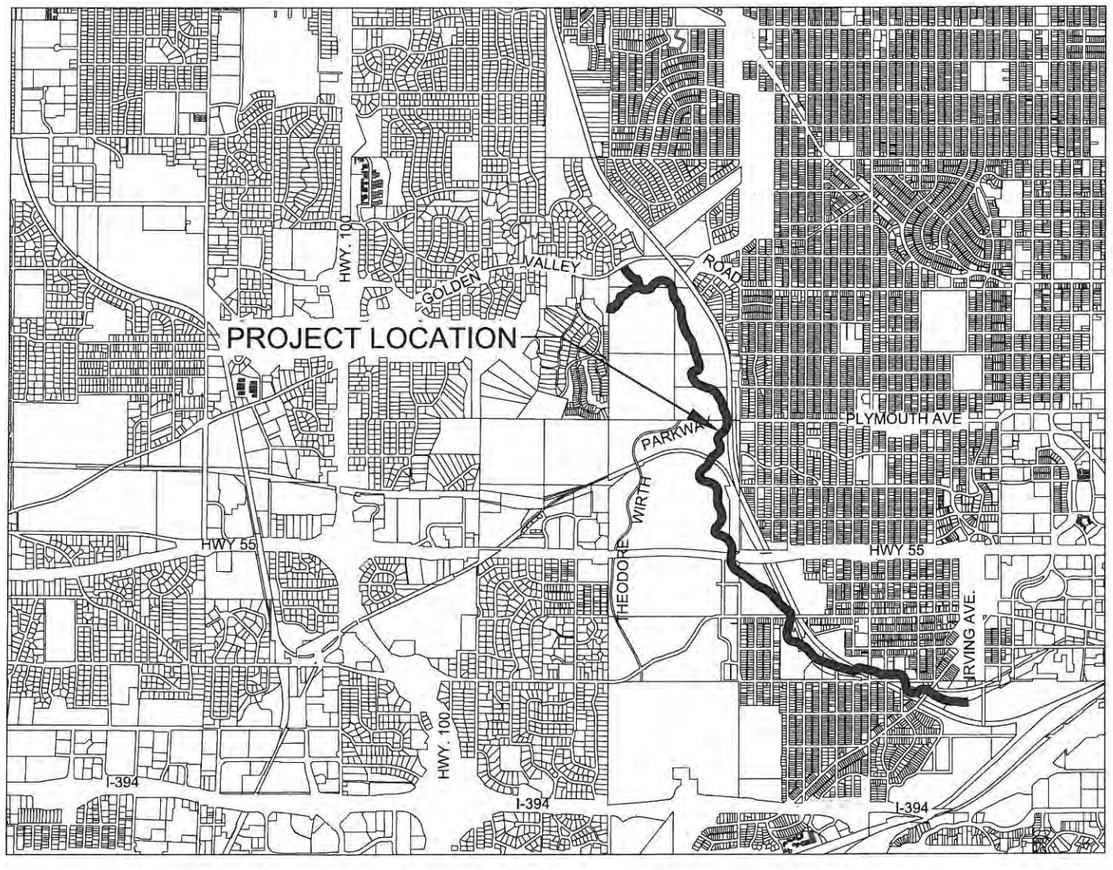
STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
SLOPE EASEMENT (SE)
PRESENT RIGHT-OF-WAY
CONTROL OF ACCES LINE
PROPERTY LINES (EXCEPT LAND LINES)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY
RIVER OR CREEK (NAME)
DRY RUN
DRAINAGE DITCH (SIZE)
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER
SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY (TIMBER)
CATCH BASIN (CB)
FIRE HYDRANT
CATTLE GUARD
OVERPASS (HIGHWAY OVER)
UNDERPASS (HIGHWAY UNDER)
BRIDGE
BUILDING (ONE STORY FRAME) (1-S-F 75)
F – FRAME C – CONCRETE
S – STONE T – TILE
B – BRICK ST– STUCCO
IRON ROD OR PIPE
MONUMENT (STONE, CONCRETE, OR METAL) (MONU.)
WOODEN HUB
GRAVEL PIT (G)
SAND PIT (S)
BORROW PIT (B)
ROCK QUARRY (Q)

UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE AND POWER
ON POWER POLE
ON TELEPHONE POLES
ANCHOR
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL) (PED.)
GAS MAIN (G)
WATER MAIN
CONDUIT
TELEPHONE CABLE IN CONDUIT (T)
ELECTRIC CABLE IN CONDUIT (P)
TELEPHONE MANHOLE (T)
ELECTRIC MANHOLE (P)
BURIED TELEPHONE CABLE (T-BUR)
BURIED ELECTRIC CABLE (P-BUR)
AERIAL TELEPHONE CABLE (T-AE)
SEWER (SANITARY OR STORM)
SEWER MANHOLE

SCALES

INDEX MAP 0 500 1000
PLAN 0 30 60
PROFILE HORIZ. 0 30 60
VERT. 0 5 10



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THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF PRIVATE UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS TO DETERMINE THE TYPE AND LOCATION OF PRIVATE UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEDICATION OF EXISTING SUBSURFACE UTILITY DATA."

EXCAVATION NOTICE SYSTEM

A CALL TO GOPHER STATE ONE (651-454-0002) IS REQUIRED A MINIMUM OF 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION.

GOVERNING SPECIFICATIONS

MAIN STEM OF BASSETT CREEK RESTORATION PROJECT SPECIAL PROVISIONS
MAIN STEM OF BASSETT CREEK PLANS
MINNEAPOLIS PARK & RECREATION BOARD GENERAL CONDITIONS
CEAM STANDARD SPECIFICATIONS
THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION."

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL COMFORM TO THE MN MUTCD INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, DATED JANUARY, 2004. ALL TRAFFIC CONTROL DEVICES SHALL HAVE RETROREFLECTIVE SHEETING.

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SITE PLAN
3	GENERAL NOTES
4–5	STREAMBANK STABILIZATION DETAILS
6	VEGETATED REINFORCED SOIL SLOPE DETAIL
7–9	SITE RENDERINGS
10–12	CONSTRUCTION NOTES
13–19	CONSTRUCTION PLANS
20–22	STORMWATER POLLUTION PREVENTION PLAN
23–25	EROSION & SEDIMENT CONTROL SITE PLAN
26	EROSION & SEDIMENT CONTROL DETAILS

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
763-541-4800 - Fax 763-541-1700
INFRASTRUCTURE | ENGINEERING | PLANNING | CONSTRUCTION

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

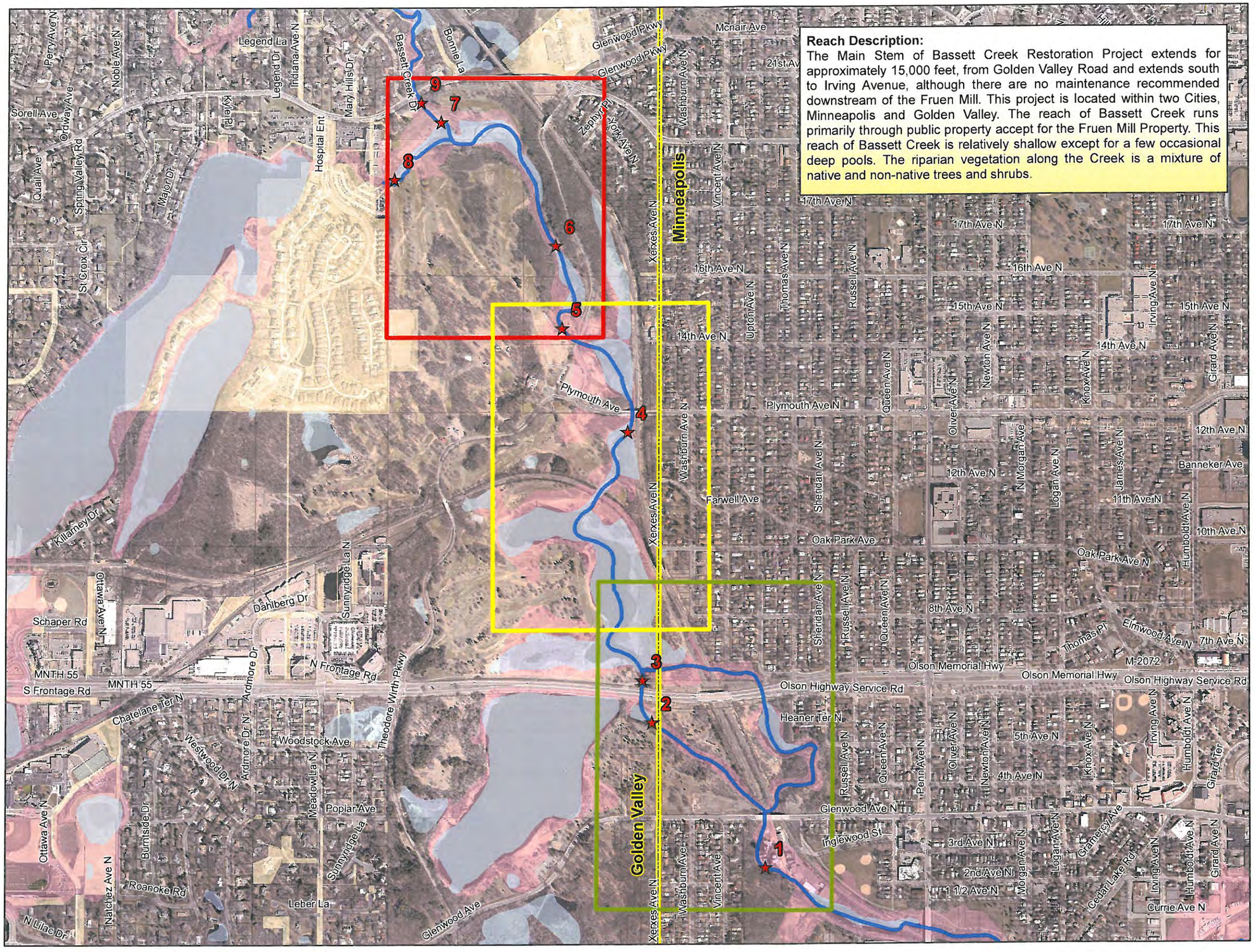
ENGR. _____
PETER R. WILLENBRING
DATE 07/16/2013 LIC. NO. 15998

PLAN REVIEW:

Prepared for:
MINNEAPOLIS PARK AND REACTION BOARD
2117 WEST RIVER ROAD NORTH
MINNEAPOLIS, Minnesota 55411
(612) 230-6400

WSB PROJECT 1165-82

SHEET NO. 1 OF 26 SHEETS



Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

Site Plan

Legend

- ★ BCWMC Maintenance Locations
- Main Stem of Bassett Creek
- A
- B
- C
- City Boundary
- Property Boundaries
- Water Bodies
- 100 Year Flood Palin
- Easements

WSB & Associates, Inc.

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ENGINEER

DATE: 07/16/2013 LIC. NO: 15998

SHEET 2 OF 26 SHEETS

SPECIAL NOTE

THE PLANS OUTLINED HEREIN GENERALLY DESCRIBE THE PROPOSED IMPROVEMENTS FOR THE MAIN STEM OF BASSETT CREEK RESTORATION PROJECT. AS PART OF CONSTRUCTION FOR THESE PROPOSED IMPROVEMENTS, THE CONTRACTOR IS EXPECTED TO WORK CLOSELY, IN THE FIELD, WITH THE OWNERS REPRESENTATIVE REGARDING THE FINAL EXTENT AND LOCATION TO WHICH THE PROPOSED IMPROVEMENTS ARE INSTALLED. THIS COORDINATION SHOULD BE INCLUDED WITH THE UNIT BID PRICES.

SITE ACCESS

SITE ACCESS AND LIMITS OF CONSTRUCTION ARE IDENTIFIED ON THE PLANS. ACTUAL ACCESS ROUTES AND LIMITS OF CONSTRUCTION WILL BE STAKED IN THE FIELD BY THE ENGINEER. CONTRACTOR MAY OBTAIN ADDITIONAL ACCESS AT THEIR OWN EXPENSE.

GENERAL CONSTRUCTION NOTES

1. CONTRACTOR IS RESPONSIBLE TO LOCATE AND FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO WORK.
2. EXISTING ROADS, PARKING LOTS, TRAILS, FENCES SIGNS, UTILITIES, IRRIGATION SYSTEMS AND ALL OTHER ASSOCIATED AND EXISTING FACILITY SITE FEATURES SHALL BE PROTECTED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE THAT OCCURS TO EXISTING FACILITIES.
3. CONTRACTOR SHALL INSTALL ALL EROSION CONTROL BMPS PRIOR TO COMMENCEMENT OF GRADING.
4. ALL TREES WITH A DIAMETER OF 4 INCHES OR LARGER SHALL BE MARKED FOR REMOVAL BY OWNER OR OWNER'S REPRESENTATIVE. TREES REMOVED THAT ARE NOT MARKED SHALL BE REPLACED IN KIND AT CONTRACTORS EXPENSE.
5. ALL DISTURBED AREAS MUST BE TEMPORARILY STABILIZED WITHIN 48 HOURS OF INACTIVITY.
6. ALL GROUND DISTURBANCE GENERATED BY GRADING ACTIVITIES SHALL BE STABILIZED AND RESTORED BY FINISH GRADING WITH TOPSOIL, APPLYING NATIVE SEED W/COVER CROP AND EROSION CONTROL BLANKET INCLUDING ACCESS ROUTES AND STOCKPILE
7. SEED BED SHALL BE PREPARED WITH A MINIMUM OF 4 INCHES OF TOPSOIL WITH NO EXTRANEOUS MATERIAL OVER ¾ INCHES ON THE SURFACE.
8. EROSION CONTROL BLANKET SHALL BE MNDOT CATEGORY 4 OR OTHERWISE AS SPECIFIED.
9. VEGETATIVE AND BIOENGINEERING SOLUTIONS SHALL BE INCORPORATED WHEREVER APPROPRIATE AND FEASIBLE.

RECOMMENDED CONSTRUCTION SEQUENCE

1. PROVIDE TRAFFIC CONTROL SIGNS AS NEEDED
2. INSTALL SILT CURTAIN AND OTHER SEDIMENT CONTROLS
3. REMOVE SELECTED TREES AND STUMPS AS MARKED AND DIRECTED IN THE FIELD BY THE ENGINEER
4. STRIP IN PLACE TOPSOIL IN AREAS TO BE DISTURBED AND STOCKPILE.
5. SHAPE AND GRADE CHANNEL BANKS TO PROPOSED TYPICAL SECTION (3:1 SLOPES MAX FROM EXISTING TOE OF BANK)
6. INSTALL SELECTED STREAMBANK STABILIZATION METHOD IDENTIFIED WITHIN THE PLANS (SEE DETAILS)
7. FINISH GRADE DISTURBED AREAS, SPREAD TOPSOIL, SEED, AND STABILIZE WITH SELECTED METHOD
8. INSTALL CATEGORY 4 EROSION CONTROL BLANKET (ON SLOPES STEEPER THAN 4:1) OR STRAW MULCH OVER DISTURBED AREAS
9. REMOVE SILT CURTAIN, OTHER SEDIMENT CONTROLS AND ANY MISCELLANEOUS DEBRIS THAT WAS REMOVED FROM THE CHANNEL

TREE AND STUMP REMOVAL NOTE

THE ENGINEER WILL SELECT THE TREES AND STUMPS THAT ARE TO BE REMOVED TO GAIN ACCESS TO AND TO PROVIDE THE REQUIRED MAINTENANCE AREAS. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TREES, BRUSH, STUMPS, AND ROOTS FROM THE AREA DESIGNATED FOR CLEARING AND GRUBBING.

UTILITY COORDINATION AND CONFLICT:

UTILITY LOCATE INFORMATION IS LOCATED IN AN A APPENDIX OF THE SPECIFICATIONS AND NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL SCHEDULE OR REDIRECT HIS/HER WORK TO ENSURE THAT UTILITY COMPANY RELOCATES, INSTALLATIONS AND/OR REMOVALS DO NOT IMPEDE PROGRESS OF THE PROJECT. THE CONTRACTOR SHALL ALSO COORDINATE ALL UNANTICIPATED UTILITY RELOCATIONS OR ADJUSTMENTS DETERMINED TO BE NECESSARY TO COMPLETE THE WORK. NO CLAIMS FOR EXTRA COMPENSATION TO PERFORM THE WORK IN ACCORDANCE WITH THE PLANS THAT ARE DUE TO CONFLICTS WITH IN-PLACE UTILITIES SHALL BE CONSIDERED.

CONTRACTOR RESPONSIBILITY

CONTRACTOR IS RESPONSIBLE TO PROTECT THE PROJECT AREA, INCLUDING AREAS THAT HAVE BEEN RESTORED AND AREAS THAT HAVE NOT BEEN COMPLETED, CONSTRUCTION EQUIPMENT, AND CONSTRUCTION MATERIALS DURING ADVERSE WEATHER CONDITIONS AND PERIODS OF HIGH FLOWS WITHIN THE CHANNEL AT ALL TIMES. NO COMPENSATION WILL BE MADE TO THE CONTRACTOR FOR ADDITIONAL COSTS INCURRED FOR REPAIR OR REPLACEMENT OF ANY DAMAGE THAT MAY OCCUR DUE TO ADVERSE WEATHER CONDITIONS.

DESCRIPTION OF PROPOSED IMPROVEMENTS

THE TECHNIQUES DISCUSSED BELOW ARE COMMONLY USED IN STREAMBANK RESTORATION . THEY WERE INCLUDED IN THE DESIGN FOR THEIR FUNCTIONALITY WITH THE EXPECTATION THAT MOST CONTRACTORS HAVE HAD EXPERIENCE WITH THESE TECHNIQUES AND UNDERSTAND HOW TO INSTALL THEM. THIS DESIGN INCORPORATES THE MOST APPROPRIATE MEASURES TO USE AT EACH INDIVIDUAL SITE IN ORDER TO MEET THE STABILIZATION OBJECTIVES . THE FINAL SIZE, DEPTH, AND LOCATION OF THESE BMPs SHALL BE FINALIZED IN THE FIELD, BY THE PROJECT AND FIELD ENGINEER, DURING CONSTRUCTION.

SLOPE PREPARATION

THIS WORK CONSISTS OF SHAPING THE CONTOURS OF THE MAINTENANCE AREAS TO ACHIEVE SLOPES AS SHOWN ON THE PLANS. SLOPE PREPARATION WILL AID IN THE PLACEMENT OF THE SELECTED SLOPE STABILIZATION METHOD. IT IS ANTICIPATED THAT EARTHWORK ON THIS PROJECT WILL BALANCE ON SITE (SEE DETAIL).

FIELDSTONE BOULDER

FIELDSTONE BOULDER WILL BE USED TO PROTECT THE TOE OF THE STREAM BANK. IN STREAM TYPICALLY CONSISTS OF BOULDER-SIZED ROCK (30 INCHES TO 34 INCHES IN DIAMETER) PLACED OVER A HALF FOOT THICK LAYER OF CLASS I FIELDSTONE RIP RAP AND A HALF FOOT LAYER OF COARSE FILTER AGGREGATE. THE BOULDER WILL EXTEND UP THE RESHAPED SLOPE AND CANNOT EXTEND PAST THE TOP OF BANK. THE EXACT LOCATION AND ELEVATION OF THE BOULDER TOE WILL BE STAKED IN THE FIELD BY THE ENGINEER(SEE DETAIL). **PLACEMENT OF FIELDSTONE BOULDERS MUST NOT RESULT IN A DECREASE OF CHANNEL CROSS SECTION.**

FIELDSTONE RIP RAP

FIELDSTONE RIP RAP WILL BE USED TO PROTECT THE TOE OF THE STREAM BANK. IN STREAM SYSTEMS, RIP RAP CONSISTS OF COBBLE-SIZED ROCK (12 INCHES TO 18 INCHES IN DIAMETER). THE RIPRAP IS KEYED IN TO THE STREAMBED AND EXTENDS UP THE RESHAPED SLOPE AND CANNOT EXTEND PAST THE TOP OF BANK. THE EXACT LOCATION AND ELEVATION OF THE STONE TOE WILL BE STAKED IN THE FIELD BY THE ENGINEER. HAND PLACEMENT OF FIELDSTONE RIP RAP WILL BE REQUIRED AND WILL BE DIRECTED BY THE ENGINEER (SEE DETAIL). **PLACEMENT OF FIELDSTONE RIP RAP MUST NOT RESULT IN A DECREASE OF CHANNEL CROSS SECTION.**

VEGETATED REINFORCED SLOPE STABILIZATION (VRSS)

VRSS IS A BIOENGINEERING METHOD THAT COMBINES ROCK, GEOSYNTHETICS, SOIL, AND PLANTS TO STABILIZE STEEP, ERODING BANKS. VRSS TYPICALLY INVOLVES PROTECTING LAYERS OF SOIL WITH A BLANKET OR GEOTEXTILE MATERIAL CREATING "SOIL LIFTS" (ALSO CALLED "SOIL PILLOWS") AND VEGETATING THE SLOPE. THE VEGETATION ROOT SYSTEM PROVIDES THE LONG-TERM SLOPE STABILIZATION.

BIO-LOGS BANK PROTECTION

BIO-LOGS ARE NATURAL FIBER ROLLS MADE FROM COIR FIBER THAT ARE LAID ALONG THE TOE OF THE STREAM BANK SLOPE TO STABILIZE THE TOE OF THE STREAM BANK. THE BIO-LOGS ARE TYPICALLY 12 INCHES IN DIAMETER. BECAUSE THEY ARE MADE OF NATURAL FIBER, VEGETATION CAN GROW ON THE BIO-LOGS. WHEN NEEDED, GRADING OF THE STREAM BANK SLOPE ABOVE THE BIO-LOG WILL ACHIEVE A MORE STABLE SLOPE (2:1 TO 3:1). CORD GRASS PLUGS WILL BE PLACED WITHIN THE BIO-LOG THREE FEET ON CENTER.

LIVE FASCINES

LIVE FASCINES ALSO USE DORMANT WILLOW AND DOGWOOD CUTTINGS INSTALLED DURING THE DORMANT SEASON. IN THIS CASE, THE CUTTINGS ARE BUNDLED TOGETHER AND PLANTED IN A ROW PARALLEL TO THE STREAM FLOW. THEY CAN BE EFFECTIVE IN REDUCING SHEET EROSION ALONG A SLOPE BECAUSE A PORTION OF THE FASCINE EXTENDS ABOVE THE GROUND SURFACE.

CROSS VANES

CROSS VANES (OR CONSTRUCTED RIFFLES) STRUCTURES, WHICH ARE CONSTRUCTED OF BOULDERS AND ROCKS TO FLATTEN THE SLOPE OF THE CHANNEL AND REDUCE THE VELOCITY OF THE FLOW IN THE CHANNEL. CROSS VANES EXTEND ACROSS THE CREEK BOTTOM, AND ARE EMBEDDED (FIVE FEET) IN EACH BANK. CROSS VANES DIRECT THE MAIN FLOW TO THE CENTER OF THE STREAM TO REDUCE BANK EROSION (SEE DETAIL).

ROCK VANES

ROCK VANES, OR J-VANES, ARE CONSTRUCTED OF BOULDERS EMBEDDED INTO THE CREEK BOTTOM. THE VANES ARE EMBEDDED (FIVE FEET) IN THE STREAM BANK AND ARE ORIENTED UPSTREAM (20 TO 30 DEGREES) TO DIRECT THE FLOW AWAY FROM THAT BANK. J-VANES WILL NOT OCCUPY NO MORE THAN ONE-THIRD OF THE CHANNEL WIDTH (SEE DETAIL).

ROOT WADS

ROOT WADS ARE CONSTRUCTED FROM ROOT BALLS OF TREES REMOVED AS PART OF THIS PROJECT. THE TRUNKS ARE BURIED INTO THE BOTTOM OF THE STREAM BANK, WITH THE ROOT WAD END STICKING OUT INTO THE STREAM. SUPPORTING "FOOTER LOGS" AND BOULDERS ARE USED TO STABILIZE THE ROOT WADS.

LIVE STAKES

LIVE STAKES ARE DORMANT STEM CUTTINGS, TYPICALLY WILLOW AND DOGWOOD SPECIES. THEY ARE COLLECTED AND INSTALLED DURING THE DORMANT SEASON AND GROW NEW ROOTS AND LEAVES REVEGETATING A STREAM BANK. MATERIALS WILL BE CUT AND PLACED IN A CONTAINER OF WATER TO BE TRANSPORTED TO THE SITE AND KEPT IN WATER UNTIL INSTALLED. TAPER THE CUTTING WITH THE END GOING INTO THE GROUND AT RIGHT ANGLES TO THE SLOPE FACE, 2/3 - 3/4 OF THEIR LENGTH. CARE SHALL BE TAKEN NOT TO SPLIT THE ENDS OR DAMAGE THE BARK OF THE CUTTINGS. THE ENGINEER SHALL STAKE THE LOCATION OF LIVE STAKES IN THE FIELD (SEE DETAIL).

SEEDING SPECIFICATIONS:

SEEDING NATIVE GRASSES

RESHAPED AND DISTURBED AREAS ALONG BASSETT CREEK WILL BE REESTABLISHED WITH THE FOLLOWING:

- **SEED MIX**(S) PRAIRIE RESTORATION INC. (PRI) SHORELINE GRASS MIX OR SAVANNA GRASS MIX TO BE APPLIED AT @ 20 LBS/AC.
- •• THE **PRI SHORELINE SEED** MIX IS A SHADE TOLERANT MIX THAT IS ABLE TO WITHSTAND INUNDATION FOR SEVERAL DAYS. THE **PRI SHORELINE SEED** MIX WILL BE USED ALONG THE DISTURBED SLOPES OF BASSETT CREEK FROM THE TOP OF STONE TO THE APPROXIMATE 10 YEAR STAGE ELEVATION, TO BE STAKED IN THE FIELD.
- •• THE **PRI SAVANNA SEED** MIX IS A SHADE TOLERANT MIX THAT IS SUITABLE FOR UPLAND AREAS. THE **PRI SAVANNA SEED** MIX WILL BE USED ALONG THE DISTURBED SLOPES OF BASSETT CREEK FROM THE APPROXIMATE 10 YEAR STAGE ELEVATION TO THE TOP OF SLOPE, TO BE STAKED IN THE FIELD.
- •• THE PLACEMENT OF THESE SEED MIXES WILL BE DIRECTED BY THE ENGINEER IN THE FIELD
- **ADDITIONAL TEMPORARY SEED:** ADDITIONAL OATS OR WINTER WHEAT SHALL BE MIXED INTO PRI MIXES @ 50 LBS/AC TO PROVIDE A FAST GROWING VEGETATIVE COVER.

SOIL STABILIZATION REQUIREMENTS FOR SEEDING NATIVE GRASSES:

- **STRAW MULCH** @ 2 TON/AC (SLOPES LESS THAN 4:1)
- **BLANKET** MNDOT TYPE IV FOR (SLOPES GREATER THAN 4:1)
- THE PLACEMENT OF SOIL STABILIZATION MEASURES WILL BE DIRECTED BY THE ENGINEER IN THE FIELD.

TURF ESTABLISHMENT

AREAS DISTURBED DURING CONSTRUCTION THAT ARE NOT IMMEDIATELY ADJACENT TO BASSETT CREEK OR IN NON-MAINTAINED AREAS SHALL BE REESTABLISHED WITH THE FOLLOWING:

- **SEED MIX** MNDOT 260 @ 100 LBS/AC
- **FERTILIZER** MNDOT TYPE 2 @ 200 LBS/AC
- **STRAW MULCH** @ 2 TON/AC AND DISC ANCHORED MULCHED (SLOPES LESS THAN 4:1)
- **EROSION BLANKET** MNDOT TYPE 4 FOR (SLOPES GREATER THAN 4:1)
- AREAS REQUIRING TURF ESTABLISHMENT WILL BE DIRECTED BY THE ENGINEER IN THE FIELD AND INCLUDE EITHER TYPE I MULCH MATERIAL OR CATEGORY 4 EROSION CONTROL BLANKET.

REVISION NO. / DATE / EXPLANATION

SCALE: AS NOTED
PLAN BY: ESF | DESIGN BY: ESF
CHECKED BY: PH | PROJECT NO: 1165-82
RECORD COPY BY: | DATE:

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ENGINEER
DATE: 07/16/2013 LIC. NO. 15998

MAIN STEM OF BASSETT CREEK
RESTORATION PROJECT
MINNEAPOLIS PARK AND
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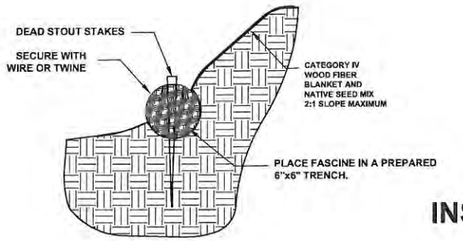
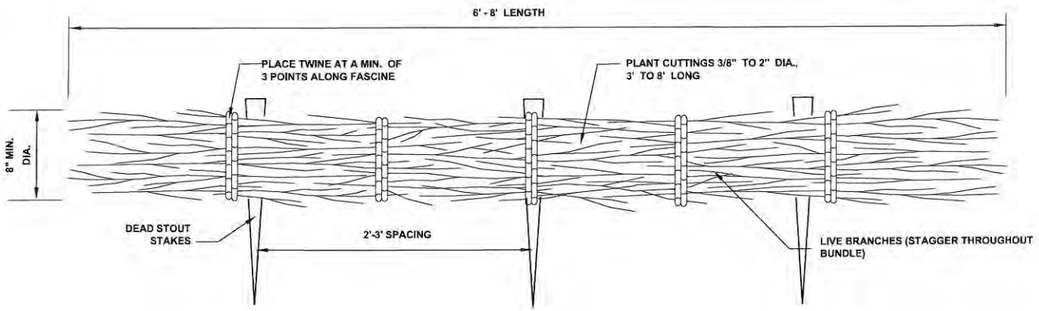
INFRASTRUCTURE ■ ENGINEERING ■ PLANNING ■ CONSTRUCTION

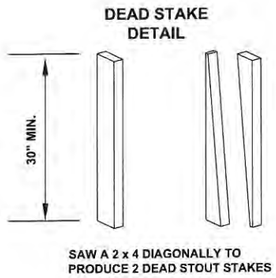
CONSTRUCTION NOTES
PROJECT NUMBER 01165-82

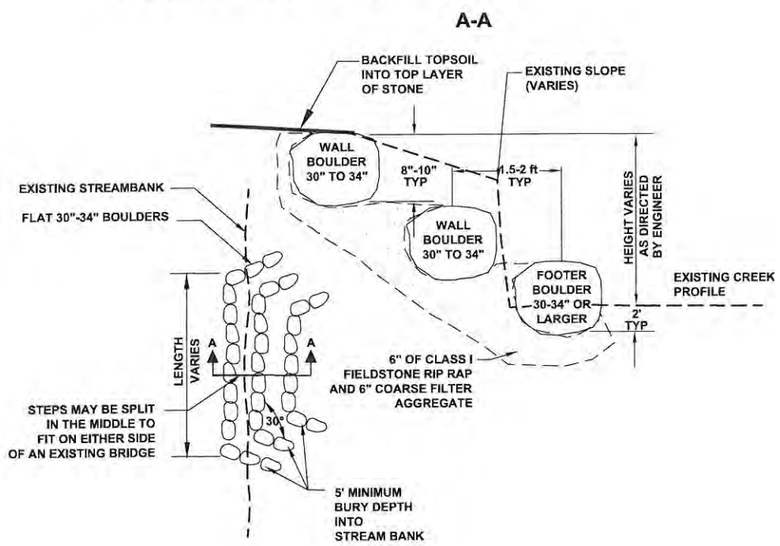
FASCINE INSTALLATION DETAIL



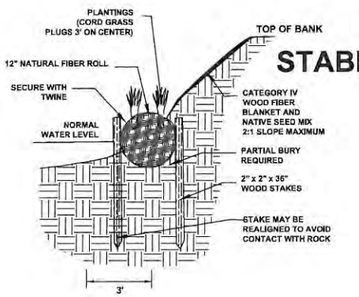


BOULDER STEPS

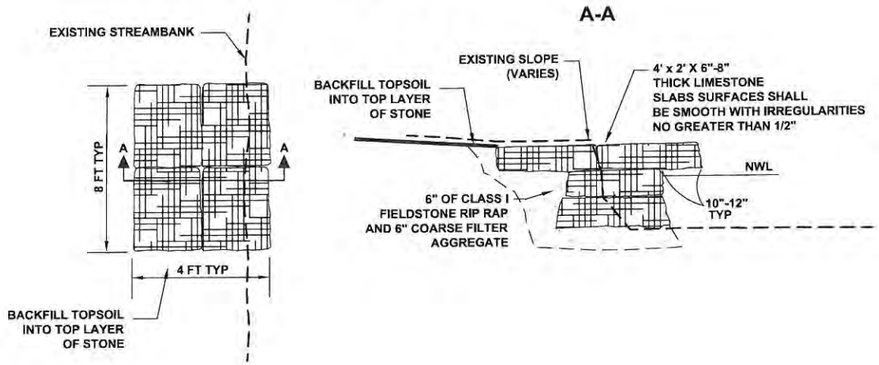




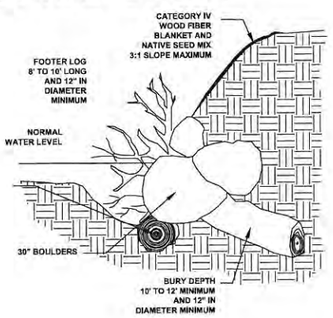
BIO-LOG STABILIZATION DETAIL



FISHING BLOCK



ROOT WAD DETAIL



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SCALE: AS NOTED | DESIGN BY: ESF | PLAN BY: ESF | PROJECT NO. 1165-82 | CHECKED BY: PH | RECORD COPY BY: | DATE

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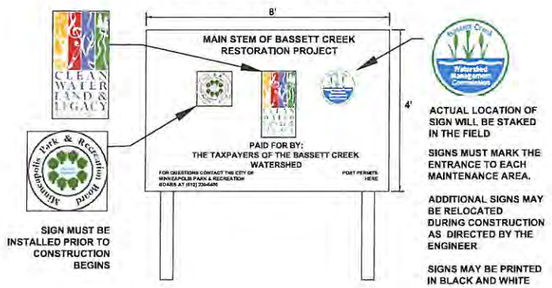
STREAMBANK STABILIZATION DETAILS
PROJECT NUMBER 01165-82

PROJECT SIGNAGE



SIGN MUST BE INSTALLED PRIOR TO CONSTRUCTION BEGINS

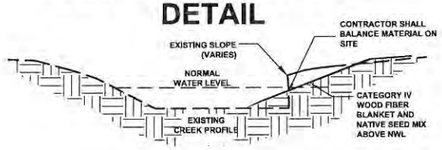
ACTUAL LOCATION OF SIGN WILL BE STAKED IN THE FIELD

SIGNS MUST MARK THE ENTRANCE TO EACH MAINTENANCE AREA.

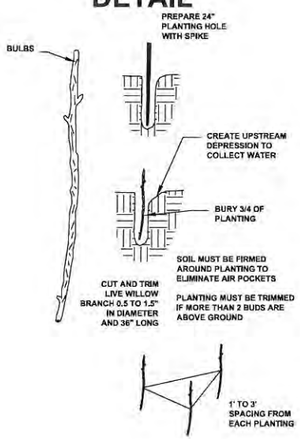
ADDITIONAL SIGNS MAY BE RELOCATED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER

SIGNS MAY BE PRINTED IN BLACK AND WHITE

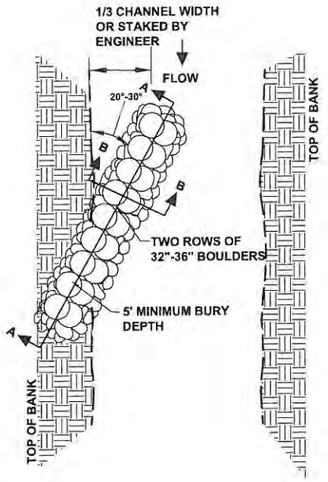
SLOPE PREPARATION DETAIL



LIVE STAKE DETAIL

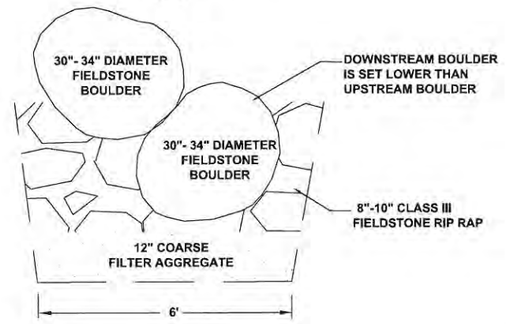


PLAN VIEW

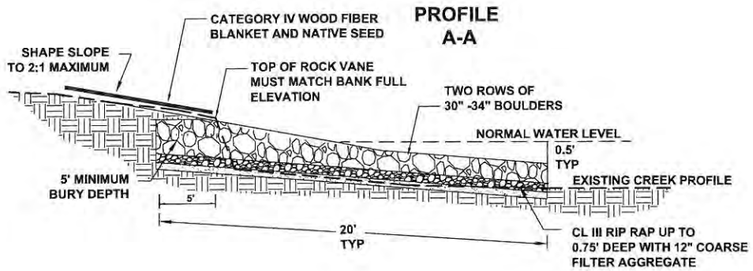


ROCK VANE

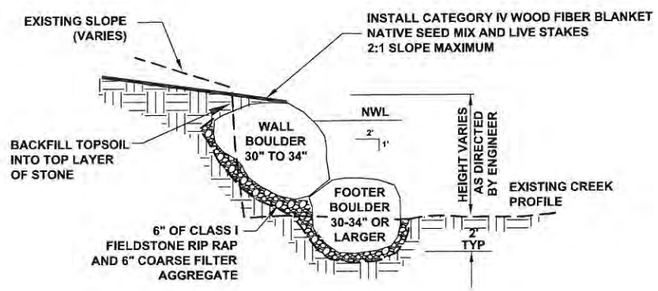
CROSS SECTION B-B



PROFILE A-A



FIELDSTONE STABILIZATION DETAIL



REVISION NO. | DATE | EXPLANATION

SCALE: AS NOTED | DESIGN BY: CSF | PROJECT NO. 1165-82
PLAN BY: CSF | CHECKED BY: PH | RECORD COPY BY: | DATE

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DATE: 07/16/2013 | ENGINEER | LIC. NO. 15998

MAIN STEM OF BASSETT CREEK
RESTORATION PROJECT
MINNEAPOLIS PARK AND
RECREATION BOARD, MINNESOTA

701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
763-541-4800, Fax 763-541-1700
WSB & Associates, Inc.
INFRASTRUCTURE | ENGINEERING | PLANNING | CONSTRUCTION

STREAMBANK STABILIZATION DETAILS
PROJECT NUMBER 01165-82

GENERAL NOTES

1. SEE SITE PLAN FOR INDIVIDUAL PLANTING
2. SCRAPE AND STOCKPILE TOPSOIL IN IMMEDIATE WORK AREA
3. STOCKPILE NEEDS ADEQUATE EROSION AND SEDIMENT CONTROL BMPs
4. ALL FABRIC AND EROSION CONTROL BLANKET SHALL BE STAPLED PER MANUFACTURES RECOMMENDATIONS

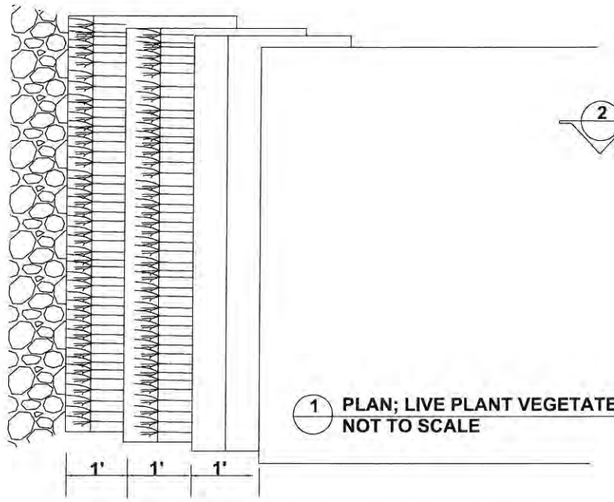
FERTILIZER

TOPSOIL

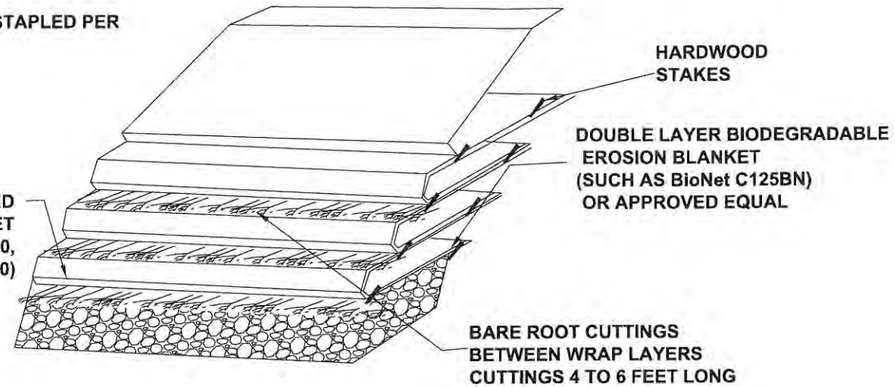
BACKFILL

GRAVEL

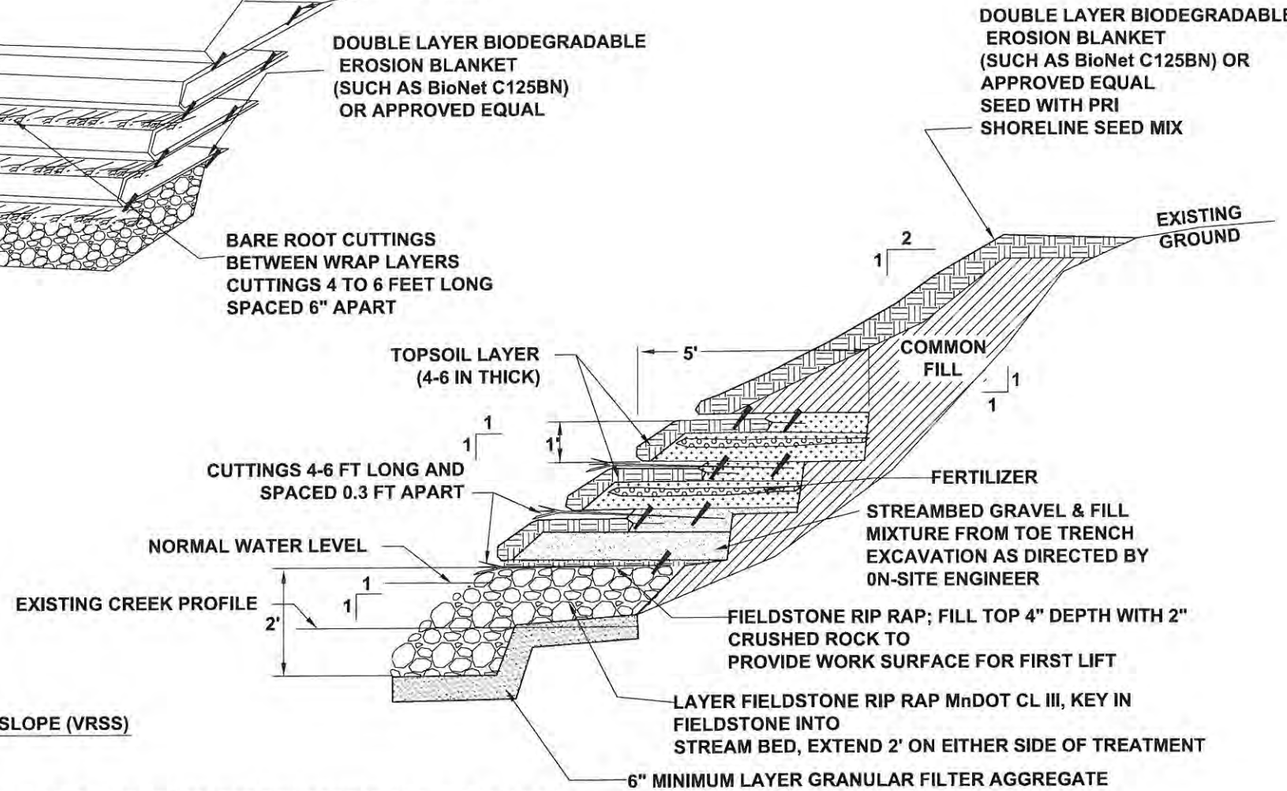
RIP RAP



1 PLAN; LIVE PLANT VEGETATED REINFORCED SOIL SLOPE (VRSS)
NOT TO SCALE



SPECIAL NOTE:
THE EXACT LOCATION , EXTENT, HEIGHT, AND DEPTH WILL BE DETERMINED INTHE FIELD BY THE ENGINEER



2 SECTION; LIVE PLANT VEGETATED REINFORCED SOIL SLOPE (VRSS)
NOT TO SCALE

1. The ENGINEER must be notified at least 3 days prior to root wad installation and must be on site during installation.
2. Soak dormant cuttings for a minimum of 24 hours in flowing water before planting. Soaking for 5-7 days is considered ideal. The dormant cuttings should only be installed during the dormant season, after leaf drop in the fall and before bud break in the Spring. Dormant currants stored in cold storage with NO visible sign of bud break may be used into late Spring.
3. Install riprap and granular filter aggregate as specified in Section 02375 and as shown on the Drawings.
4. Excavate the existing Streambank slope shoreward from and level with the top of the riprap to form a stable, undisturbed surface. A flat bench should be created from the toe of the stable cut slope to the toe of the proposed stream bank riprap.
5. Dormant cuttings are to be placed on top of the riprap excavated bench at 3 branches per linear foot; the basal end of the cuttings should extend at least 2 foot past the bank of the riprap. No ore than 6 inches of the budding end of the live branch should extend past the front of the riprap. Cover the dormant cuttings with topsoil to create an even surface for the construction of the first soil lift.
6. Lay natural fiber matting on bottom of the bench, overlapping adjacent matting by 1 foot. The outer exposed fiber matting layer of each soil lift shall be GEOCOIR/DeKowe 900 woven coconut fiber mesh, BioD-MoTM90, or an ENGINEER-approved equivalent.
7. The inner layer of each soil lift shall be BioNet C125BN or an ENGINEER-approved equivalent. Lay the inner layer of BioNet on top of natural fiber matting of each soil lift. Fabric should be installed smooth with no unnecessary folds or wrinkles. Stake the shoreward end of the fiber matting in place with wooden stakes spaced every three feet as shown on the Drawings.
8. The first 6 to 8 inches of the bottom soil lift shall be filled with gravel and sand material excavated from the stream bed. The top 6 to 8 inches on the front of surface layer should be comprised of topsoil mix as shown on the Drawings.
9. The topsoil layer shall be seeded with the PRI wetland seed mix at 0.7 pounds per 1,000 square feet of lift surface area as shown on the Drawings.
10. Fold the fiber matting over the fill material and stake in place so the fabric is tout and smooth with no unnecessary folds or wrinkles. Back fill behind the bottom soil lift with granular filter material to meet the existing slope as shown on the Drawings.
11. Dormant willow cuttings are to be placed on top of the soil lift at 3 branches per linear foot; the basal end of the cuttings should extend at least 2 foot past the back of the riprap. No more than 6 inches of the bidding end of the live branch should extend past the front of the riprap. Cover the dormant cuttings with 2 to 4 inches of topsoil to create an even surface for the construction of the first soil lift.
12. The face of the second soil lift shall be offset shoreward by one foot from the face of the bottom soil lift. The first 6 inches of the second soil lift shall be filled with common fill and topsoil material as shown on the Drawings. The top 6 to 8 inches on the front and top layer should be comprised of topsoil mix as shown on the Drawings. Common fill and topsoil shall be hand tamped and not mechanically compacted to ensure vegetative success.
13. Fertilizer shall be placed at the middle of wrap layers between the backfill and topsoil during placement of fill material. Fertilizer shall be applied along the entire length of each wrap layer at a rate of 2.9 lbs per 50 foot long, 5 foot wide lift wrap.
14. The topsoil layer shall be seeded with the VRSS seed mix at 0.7 pounds per 1,000 square feet of lift surface area as shown on the Drawings.
15. Fold the fiber matting the fill material and stake in place so the fabric is tout and smooth with no unnecessary folds or wrinkles. Backfill behind the soil lift with common fill material to meet the existing slope as show on the Drawings. Fill place behind the second and third soil lift should be placed in eight inch lifts and properly compacted; hand tamped and not mechanically compacted to ensure vegetative success.
16. On both terminal ends of the soil lifts, excess matting shall be used to fold over the ends of the lift and staked firmly. On the first lift layer backfill with or fill adjacent to the end of the lift and compact to secure it firmly.
17. In locations where a third soil lift is shown in the Drawings, a third soil lift shall be constructed in the same manner as the second lift. The face of the third soil lift shall be offset shoreward by one foot from the face of the second soil lift. Dormant cuttings are not placed on top of the upper soil lift.
18. The final slope shall be shaped above the top soil lift as shown on the Drawings. Common fill with a 4 to 6 inch topsoil layer shall be used to form the final slope. The slope shall be seeded with the backcut slope seed mix and stabilized as specified in Section 02950.

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DESIGN BY: ESF
CHECKED BY: PH
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RECORD COPY BY:
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ENGINEER

DATE: 07/16/2013 LIC. NO. 15998

MAIN STEM OF BASSETT CREEK RESTORATION PROJECT MINNEAPOLIS PARK AND RECREATION BOARD, MINNESOTA

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INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

VEGETATED REINFORCED SOIL SLOPE (VRSS) DETAILS
PROJECT NUMBER 01165-82

BEFORE

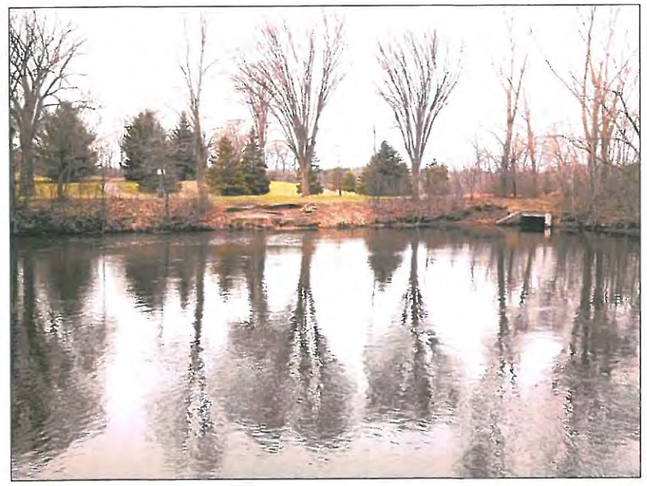
58+50

LOOKING SOUTH ACROSS BASSETT CREEK

62+50

LOOKING SOUTH ACROSS BASSETT CREEK

82+00



LOOKING SOUTH ACROSS THE LAGOON SOUTH OF HWY 55

AFTER

58+50

INSTALL BOULDER TOE STABILIZATION

62+50

INSTALL BOULDER TOE STABILIZATION REPLACE RETAINING WALL AND REESTABLISH TRAIL

82+00

RESHAPE SLOPE AND INSTALL STONE STAIRS AND FISHING PIER

SPECIAL NOTE:

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CHECKED BY: PH

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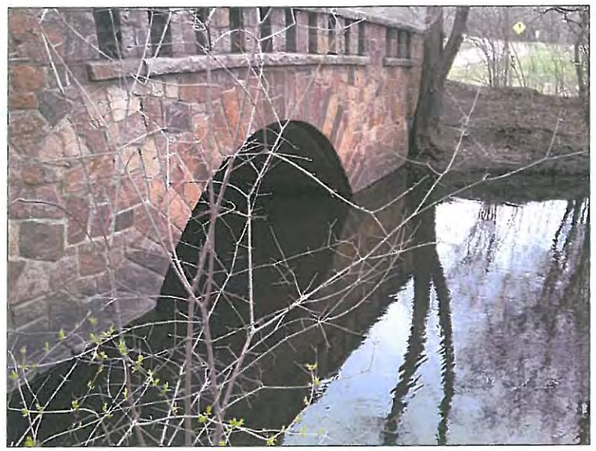
RESTORATION RENDERING DETAILS
PROJECT NUMBER 01165-82

110+50

LOOKING SOUTH DOWNSTREAM

127+50



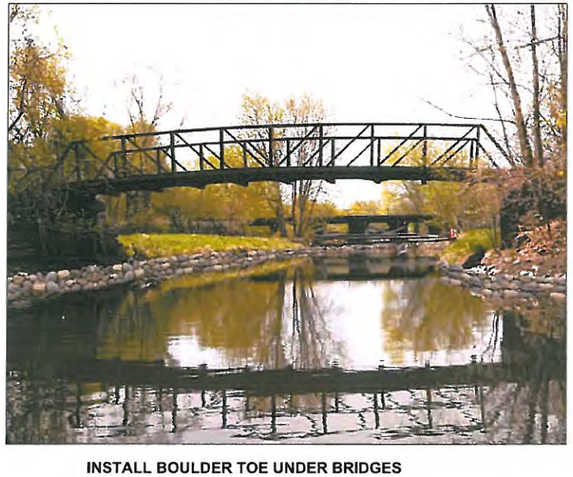
LOOKING SOUTHWEST FLOW IS FROM LEFT TO RIGHT

139+00

LOOKING EAST FLOW IS FROM LEFT TO RIGHT

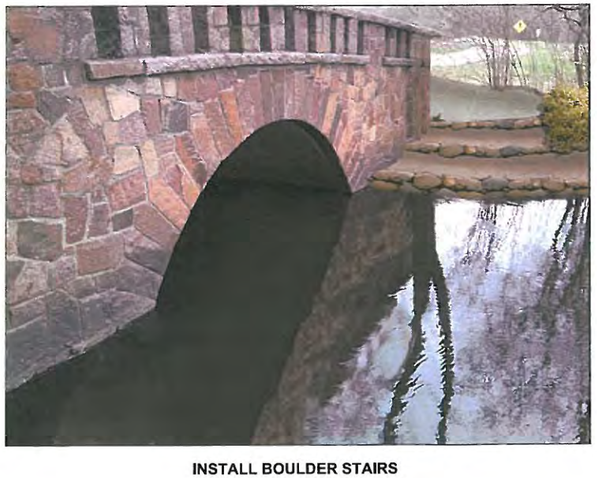
BEFORE

110+50



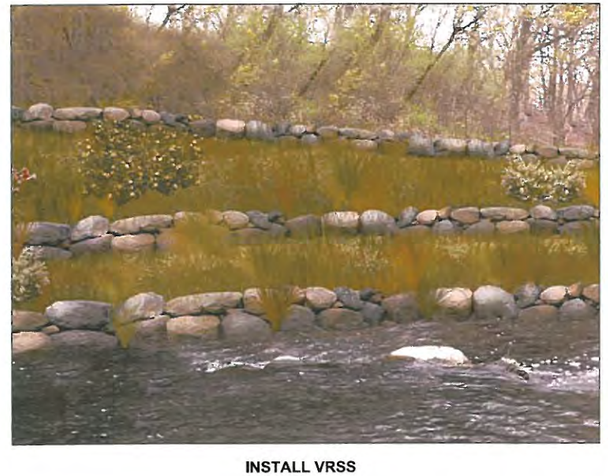
INSTALL BOULDER TOE UNDER BRIDGES

127+50



INSTALL BOULDER STAIRS

139+00



INSTALL VRSS

AFTER

SPECIAL NOTE:

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ENGINEER

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INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

RESTORATION RENDERING DETAILS
PROJECT NUMBER 01165-82

147+50

LOOKING EAST UNDER THE BRIDGE

161+00

LOOKING WEST THE FLOW IS FROM RIGHT TO LEFT

163+00

LOOKING SOUTH DOWNSTREAM

BEFORE

147+50

INSTALL BOULDER TOE

161+00

RESHAPE SLOPE AND INSTALL TREE REVETMENT

163+00

RESHAPE SLOPE AND INSTALL BIO-LOG

AFTER

SPECIAL NOTE:

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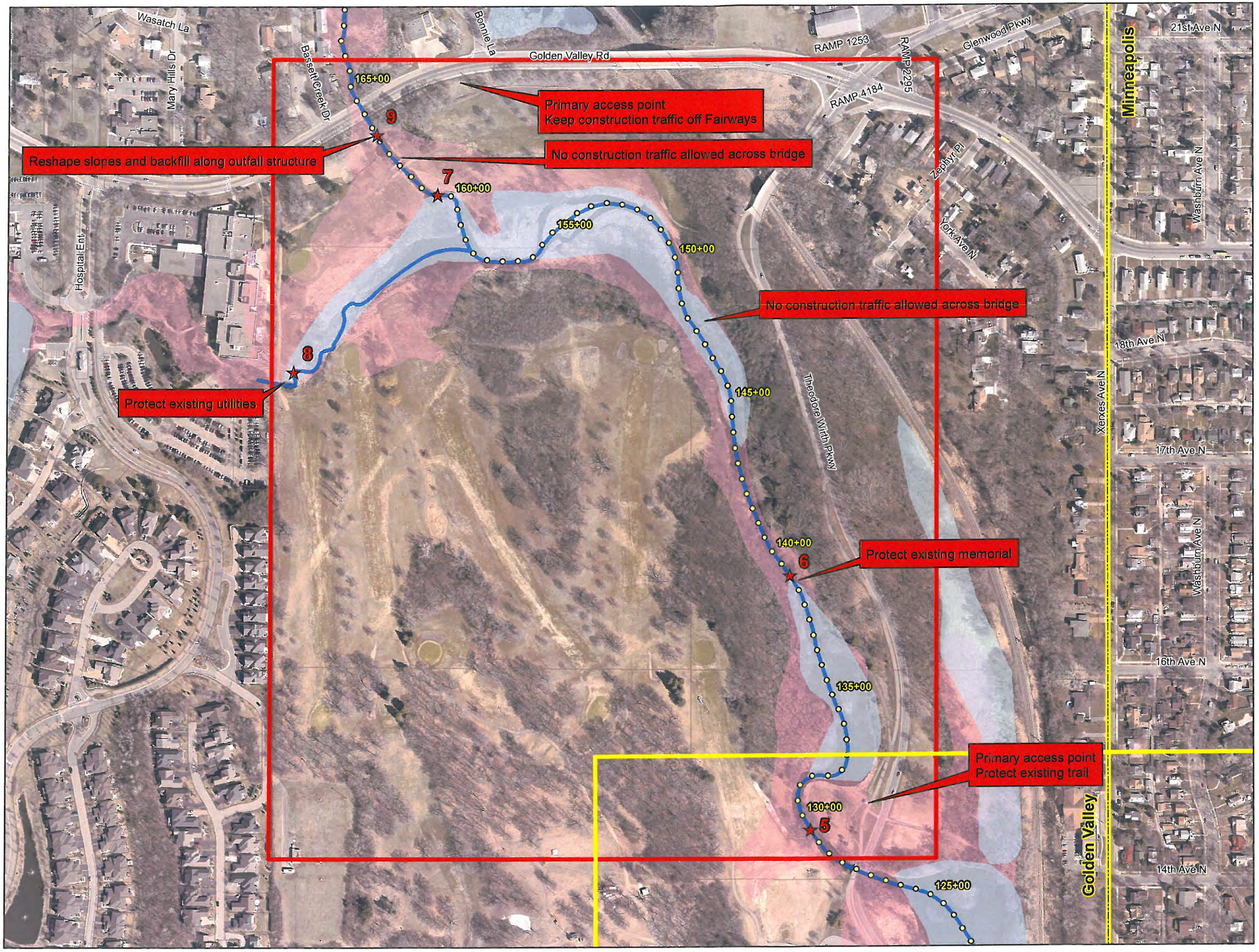

Main Stem of Bassett Creek Restoration Project

Construction Notes
Area A
Station 165+00-130+00

Legend

- BCWMC Maintenance Locations
- A
- B
- C
- City Boundary
- CreekStationing
- Bassett_Creek
- Surface Water
- 100 Year Flood Plain
- Property Boundary

N

0 100 200 400 Feet

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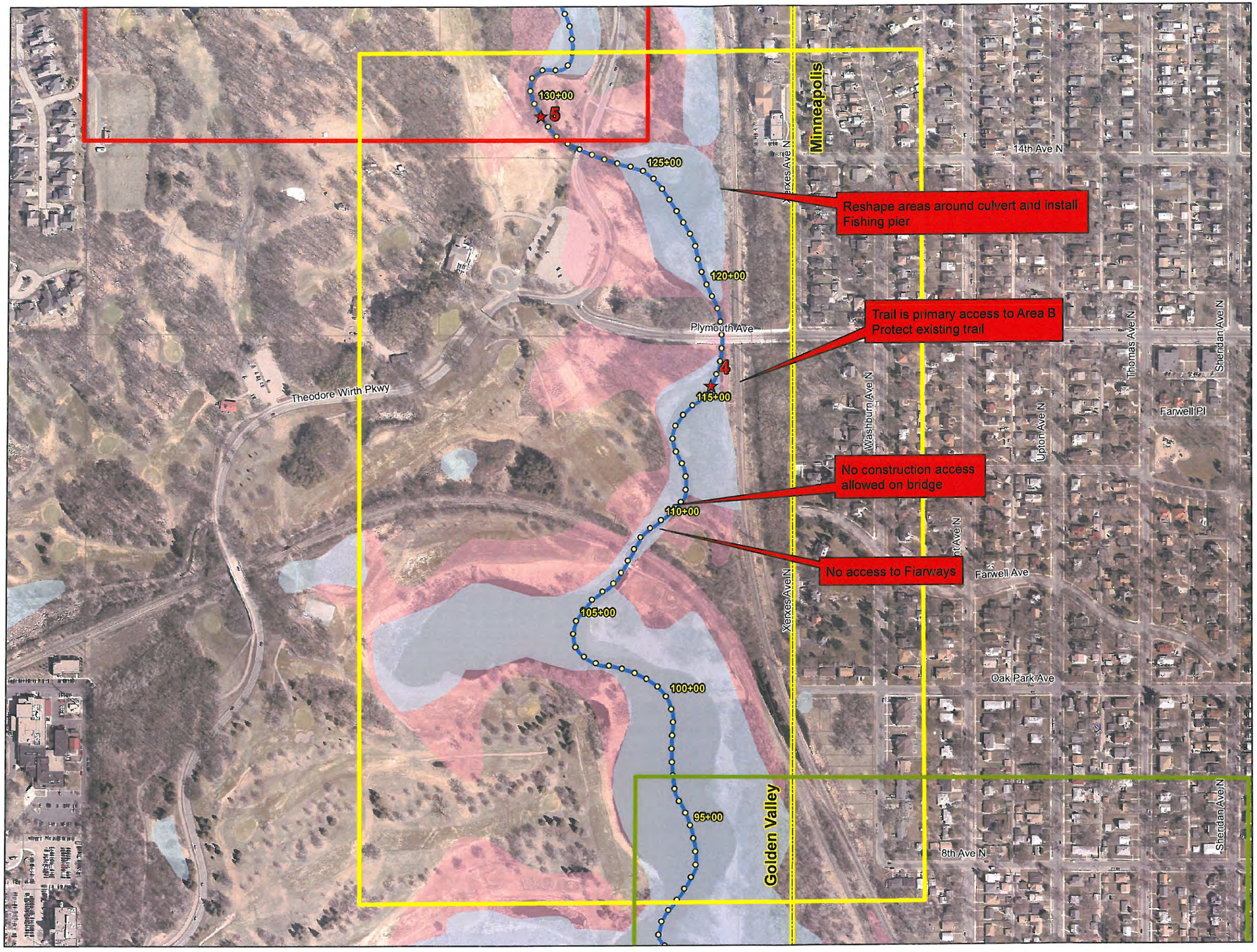
SHEET 10 OF 26 SHEETS



Main Stem of Bassett Creek Restoration Project

Construction Notes Area B Station 130+00-92+00

Legend

- BCWMC Maintenance Locations
- A
- B
- C
- CreekStationing
- City Boundary
- Bassett_Creek
- Water Bodies
- 100 Year Flood Plain
- Property Boundary

N

Feet

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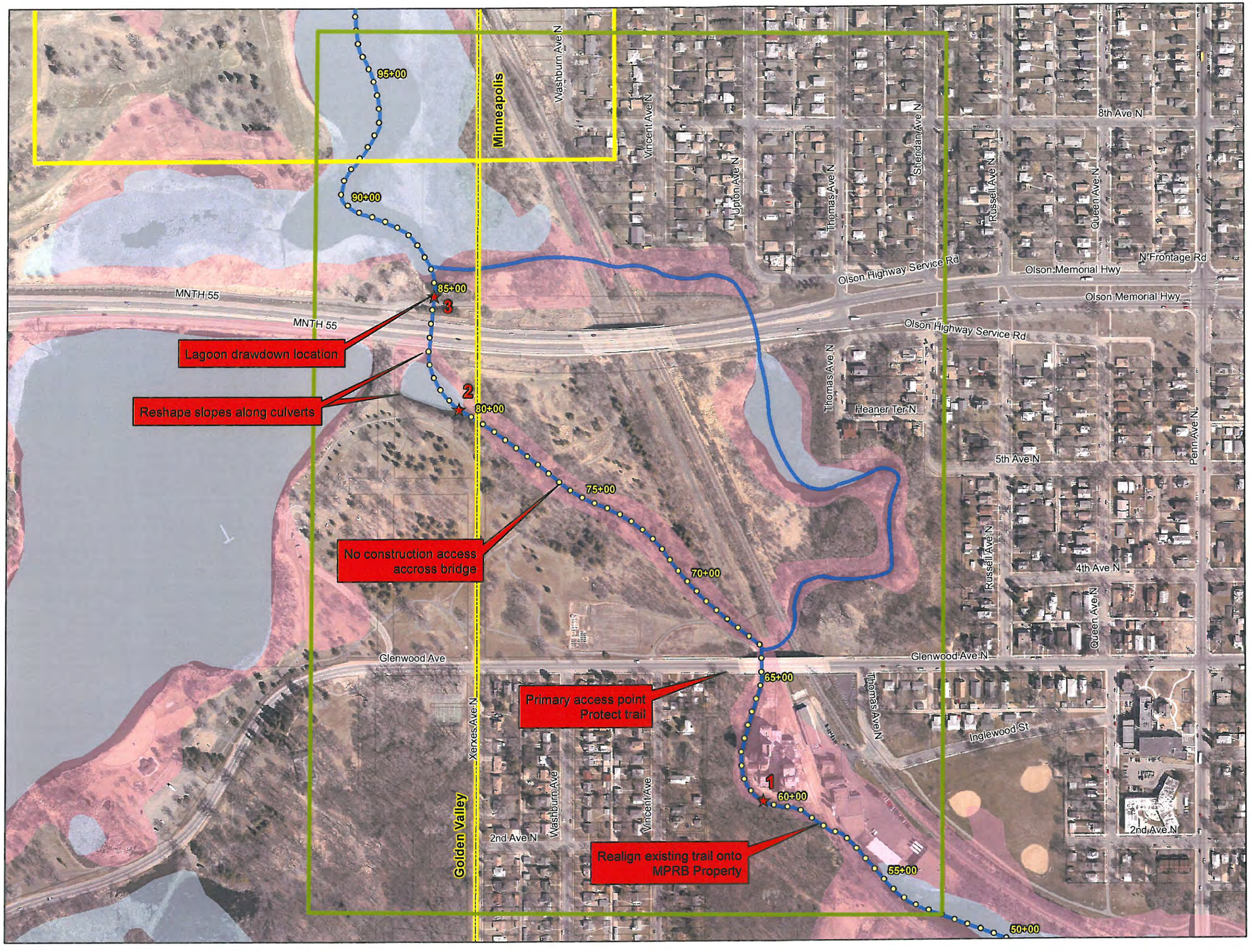
SHEET 11 OF 26 SHEETS



Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

Construction Notes Area C Station 92+00-55+00

Legend

- BCWMC Maintenance Locations
- A
- B
- C
- City Boundary
- CreekStationing
- Bassett Creek
- NWI
- 100 Year Flood Plain
- Property Boundary

N

Feet

WSB

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SHEET 12 OF 26 SHEETS

Reshape drainage swale and stabilize with10 tons of fieldstone rip rap

2	ROCK VANES		
STATION RIGHT AND LEFT	163+00	TO	STATION 163+00
MATERIALS	UNITS		ESTIMATED
COARSE FILTER AGGREGATE	TON		14
FIELDSTONE RIP RAP CLASS III	TON		26
FIELDSTONE BOULDERS 30"-34"	TON		36

Reshape existign slope and backfill around undermined existing structure

Shape streambank to facilitate the installation of 115 feet of biolog

Shape streambank to facilitate the installation of 150 feet of Bio-Log

6' FIELDSTONE BOULDER STABILIZATION			
STATION RIGHT & LEFT 162 + 40		TO STATION 162 + 00	
MATERIALS	UNITS		ESTIMATED QUANTITY
SLOPE SHAPING	LIN FT		80
COARSE FILTER AGGREGATE	TON		32
FIELDSTONE RIP RAP CLASS I	TON		32
FIELDSTONE BOULDERS 30"-34"	TON		80

Remove fallen Trees

Install four Root Wads

Shape streambank to facilitate the installation of 300 feet of biolog

Install 300 feet of fascine above Bio-Log

4	ROCK VANES		
STATION RIGHT AND LEFT	161+00	TO	STATION 160+50
MATERIALS	UNITS		ESTIMATED
COARSE FILTER AGGREGATE	TON		28
FIELDSTONE RIP RAP CLASS III	TON		52
FIELDSTONE BOULDERS 30"-34"	TON		72

Shape streambank to facilitate the installation of 315 feet of biolog

Install 315 feet of fascine above Bio-Log

Shape streambank to facilitate the installation of 475 feet of biolog

Install 475 feet of live fascine above Bio-Log

Inspect pipe
Add Fieldstone as necessary

Install 520 feet of fascine above Bio-Log

Shape streambank to facilitate the installation of 520 feet of biolog

Clear trees and brush (15 trees)

Install three Root Wads

Install four Root Wads

Main Stem of Bassett Creek Restoration Project

Construction Plan Station 165+00-150+00

Legend

- BCWMC Maintenance Locations
- CreekStationing
- Tree Removal
- Fascine
- Root Wads
- Bio Log
- Fieldstone Wall
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole
- Property Boundary

N

Feet
0 25 50 100

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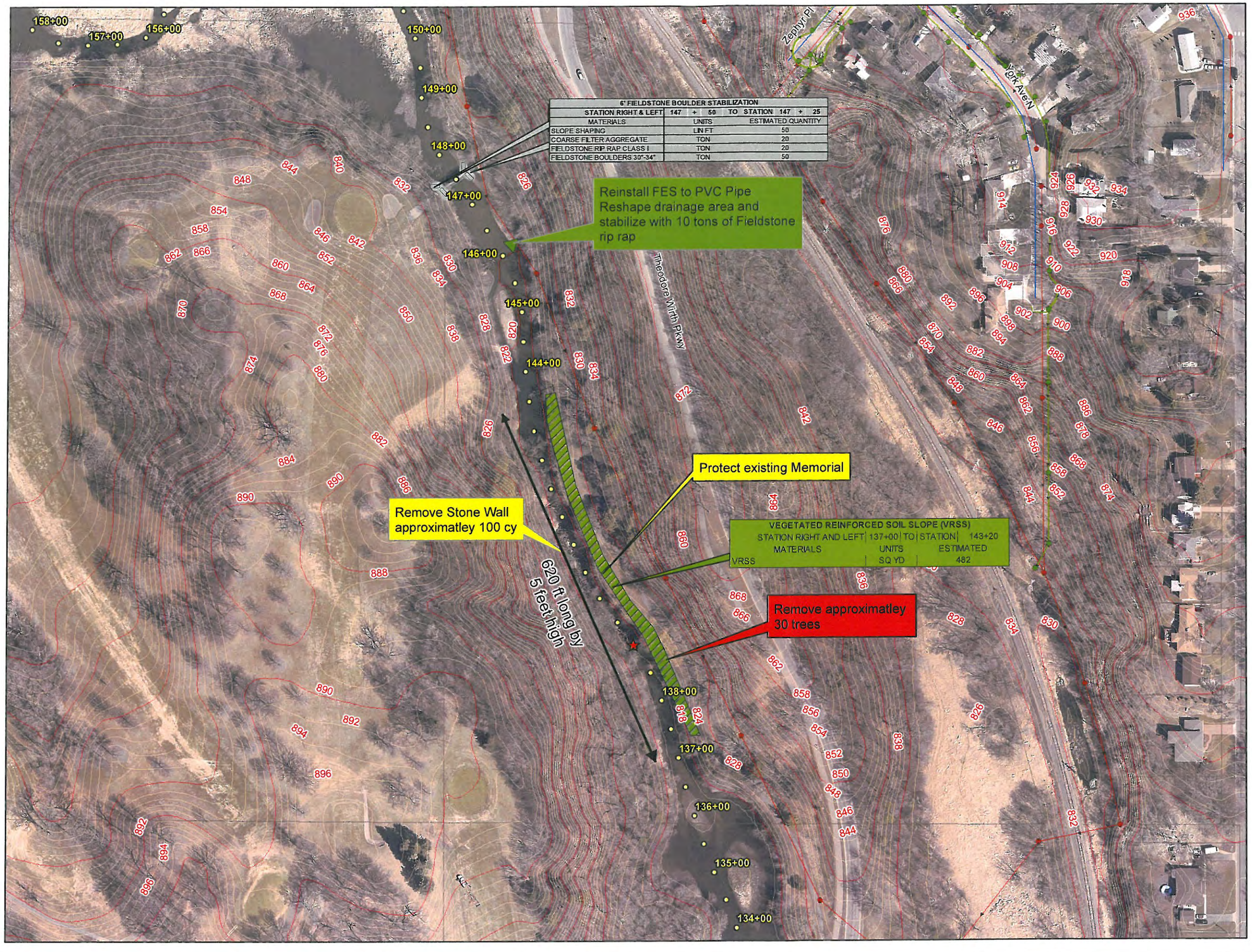
SHEET 13 OF 26 SHEETS



Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

Construction Plan Station 150+00-135+00

Legend

- BCWMC Maintenance Locations
- CreekStationing
- Fieldstone Wall
- VRSS
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole
- Property Boundary

N

0 50 100 200 Feet

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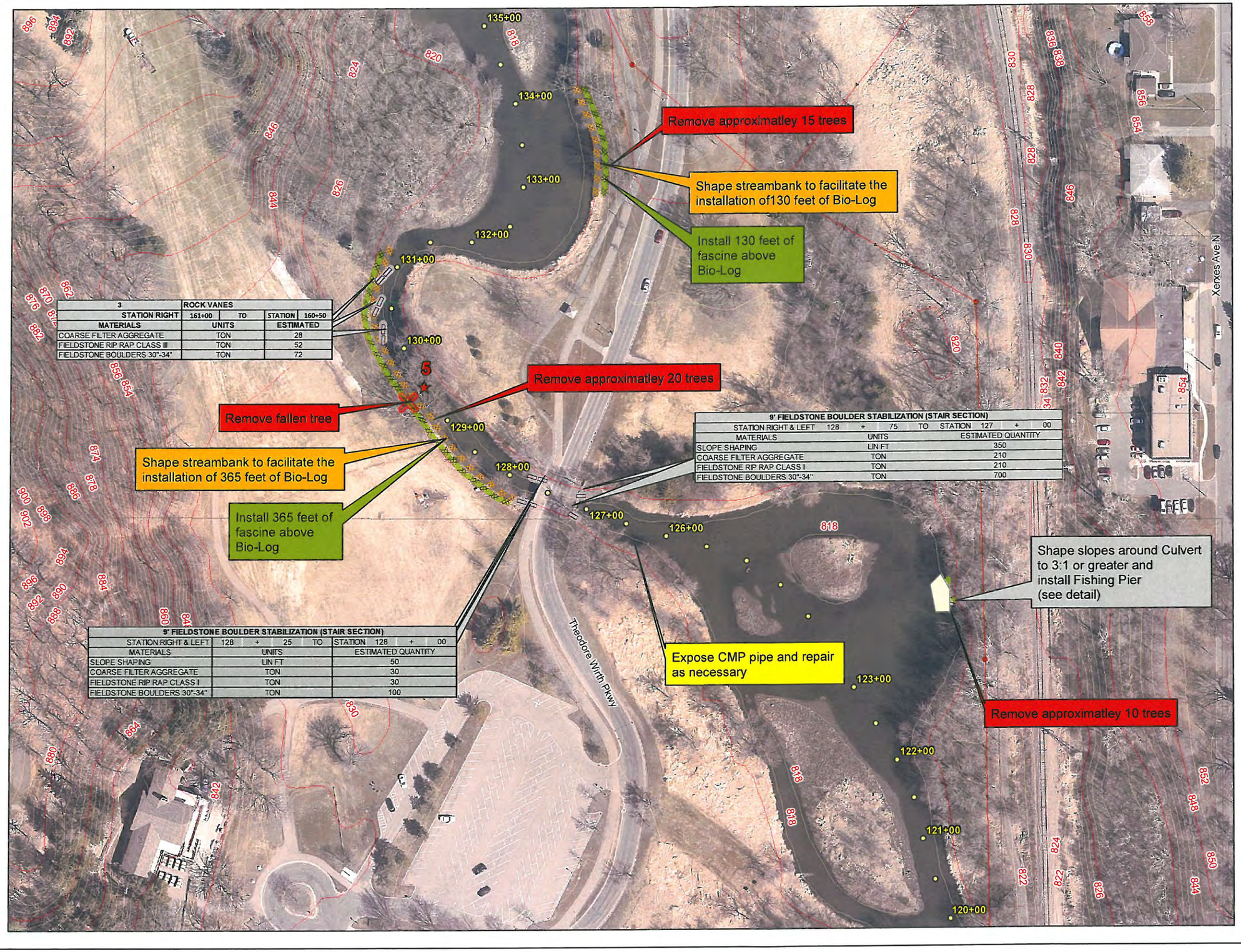
SHEET 14 OF 26 SHEETS



3	ROCK VANES			
STATION RIGHT	161+00	TO	STATION	160+50
MATERIALS	UNITS		ESTIMATED	
COARSE FILTER AGGREGATE	TON		28	
FIELDSTONE RIP RAP CLASS III	TON		52	
FIELDSTONE BOULDERS 30"-34"	TON		72	

9' FIELDSTONE BOULDER STABILIZATION (STAIR SECTION)								
STATION RIGHT & LEFT	128	+	75	TO	STATION	127	+	00
MATERIALS	UNITS				ESTIMATED QUANTITY			
SLOPE SHAPING	LIN FT				350			
COARSE FILTER AGGREGATE	TON				210			
FIELDSTONE RIP RAP CLASS I	TON				210			
FIELDSTONE BOULDERS 30"-34"	TON				700			

9' FIELDSTONE BOULDER STABILIZATION (STAIR SECTION)								
STATION RIGHT & LEFT	128	+	25	TO	STATION	128	+	00
MATERIALS	UNITS				ESTIMATED QUANTITY			
SLOPE SHAPING	LIN FT				50			
COARSE FILTER AGGREGATE	TON				30			
FIELDSTONE RIP RAP CLASS I	TON				30			
FIELDSTONE BOULDERS 30"-34"	TON				100			

Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

Construction Plan Station 135+00-120+00

Legend

- BCWMC Maintenance Locations
- CreekStationing
- Tree Removal
- Fieldstone Wall
- Root Wads
- Fascine
- Bio Log
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole
- Property Boundary

N

Feet
0 25 50 100

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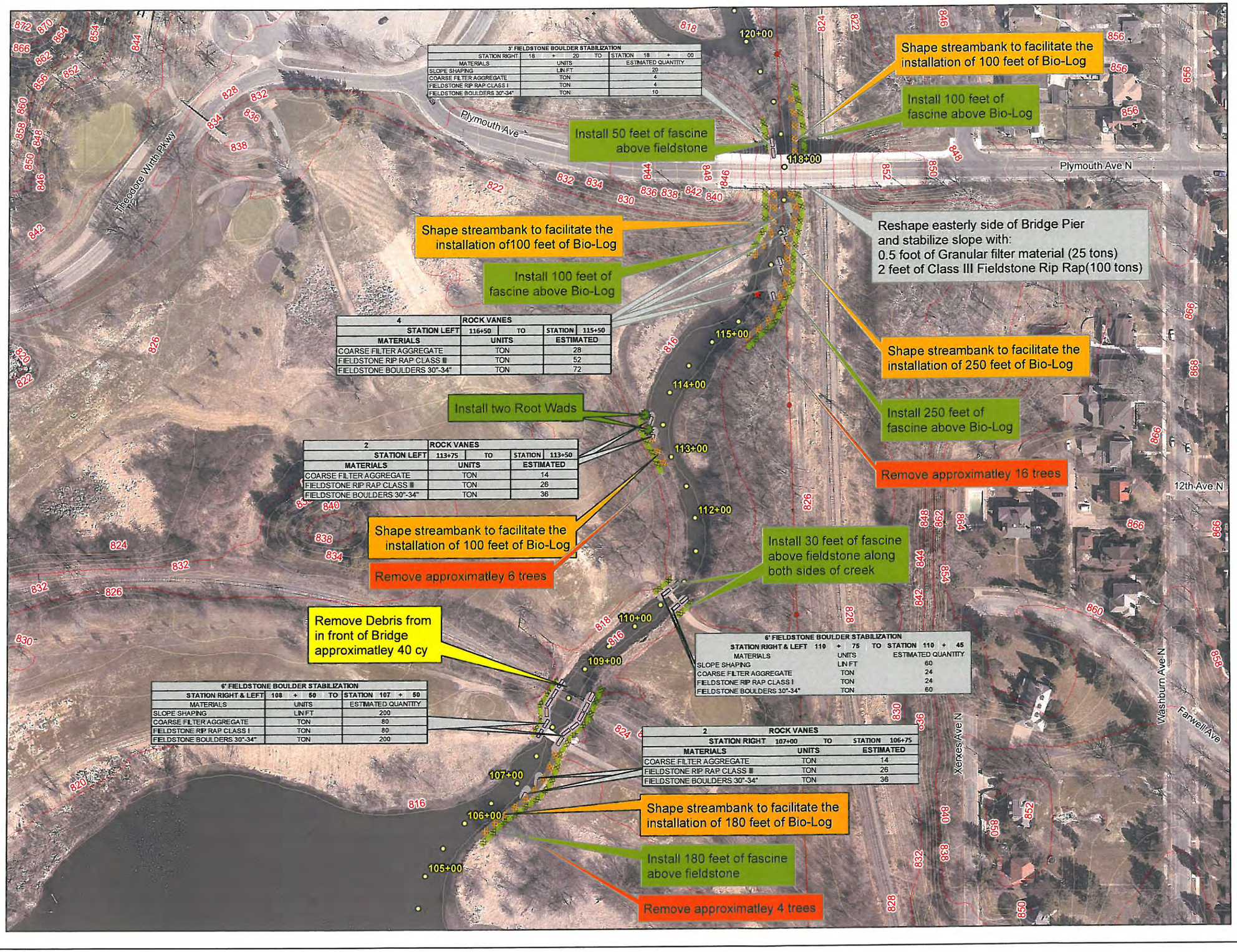
SHEET 15 OF 26 SHEETS



Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

Construction Plan Station 120+00-105+00

Legend

- BCWMC Maintenance Locations
- CreekStationing
- Root Wads
- Bio Log
- Fieldstone Wall
- Fascine
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole
- Property Boundaries

N

Feet
0 25 50 100

WSB & Associates, Inc.

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

ENGINEER

DATE: 07/16/2013 LIC. NO: 15998

SHEET 16 OF 26 SHEETS

Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

Construction Plan Station 105+00-90+00

Legend

- BCWMC Maintenance Locations
- CreekStationing
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole
- Remove Debris

N

0 25 50 100 Feet

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ENGINEER

DATE: 07/16/2013 LIC. NO: 15998

SHEET 16 OF 26 SHEETS

Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

Construction Plan Station 90+00-75+00

Install Pump at this location: Contractor must provide a 1 foot draw downof the Lagoon for a 3 month period

Shape streambank to facilitate the installation of 50 feet of Bio-Log

Remove 4 trees

Install 50 feet of fascine above bio-log

Shape streambank to facilitate the installation of 100 feet of Bio-Log

Shape streambank to facilitate the installation of 50 feet of Bio-Log

Install 100 feet of fascine above bio-log

Remove 8 trees

Remove 12 trees

Shape streambank to facilitate the installation of 50 feet of Bio-Log

Install 50 feet of fascine above bio-log

Install Fishing Block (see detail)

9' FIELDSTONE BOULDER STABILIZATION (STAIR SECTION)								
STATION RIGHT & LEFT	82	+	20	TO	STATION	81	+	80
MATERIALS	UNITS				ESTIMATED QUANTITY			
SLOPE SHAPING	LIN FT				40			
COARSE FILTER AGGREGATE	TON				24			
FIELDSTONE RIP RAP CLASS I	TON				24			
FIELDSTONE BOULDERS 30"-34"	TON				80			

6' FIELDSTONE BOULDER STABILIZATION								
STATION RIGHT & LEFT	76	+	00	TO	STATION	75	+	80
MATERIALS	UNITS				ESTIMATED QUANTITY			
SLOPE SHAPING	LIN FT				40			
COARSE FILTER AGGREGATE	TON				16			
FIELDSTONE RIP RAP CLASS I	TON				16			
FIELDSTONE BOULDERS 30"-34"	TON				40			

Legend

- BCWMC Maintenance Locations
- CreekStationing
- Small Tree Revetment
- Root Wads
- Bio Log
- Fieldstone Wall
- Fascine
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole
- Property Boundary

N

0 25 50 100 Feet

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DATE: 07/16/2013 LIC. NO: 15998

Restabilize Outfall with Fieldstone with 10 tons of Fieldstone rip rap

Shape slope to facilitate the Installation of 150 feet of Bio-Log

Install 150 feet of fascine above bio-log

Repair existing trail (Washed out) from Sta 62+00 to 64+00 approximatley 200 feet

Remove bituminous and wooden trail edging along trail approximatley 300 cy of material

Resurface 1000 feet trail with compacted Class V Aggreate

Remove approximatley 50 trees

Realign 310 feet of trail back onto MPRB property Keep 10 feet minimum from property line

Special Note: Do not disturb existing historic walls along the uphill side of the trail

Remove 30 feet of collapsed wall from within Creek

6' FIELDSTONE BOULDER STABILIZATION

STATION RIGHT & LEFT 66 + 80	TO	STATION 66 + 70
MATERIALS	UNITS	ESTIMATED QUANTITY
SLOPE SHAPING	LIN FT	10
COARSE FILTER AGGREGATE	TON	4
FIELDSTONE RIP RAP CLASS I	TON	4
FIELDSTONE BOULDERS 30"-34"	TON	10

6' FIELDSTONE BOULDER STABILIZATION

STATION RIGHT & LEFT 63 + 50	TO	STATION 60 + 50
MATERIALS	UNITS	ESTIMATED QUANTITY
SLOPE SHAPING	LIN FT	300
COARSE FILTER AGGREGATE	TON	120
FIELDSTONE RIP RAP CLASS I	TON	120
FIELDSTONE BOULDERS 30"-34"	TON	300

6' FIELDSTONE BOULDER STABILIZATION

STATION RIGHT & LEFT 58 + 50	TO	STATION 57 + 50
MATERIALS	UNITS	ESTIMATED QUANTITY
SLOPE SHAPING	LIN FT	100
COARSE FILTER AGGREGATE	TON	40
FIELDSTONE RIP RAP CLASS I	TON	40
FIELDSTONE BOULDERS 30"-34"	TON	100

Main Stem of Bassett Creek Restoration Project

Construction Plan Station 75+00-57+00

Legend

- BCWMC Maintenance Locations
- CreekStationing
- Existing Trail
- Property Boundary
- Proposed Trail
- Small Tree Revetment
- Root Wads
- Bio Log
- Fieldstone Wall
- Fascine
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole

N

Feet
0 25 50 100

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ENGINEER

DATE: 07/16/2013 LIC. NO: 15938

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

PROJECT SITE EVALUATION, ASSESSMENT, AND PLANNING

THIS NARRATIVE IS TO SERVE AS A GUIDANCE PLAN AND MUST BE AMMENDED AND MODIFIED AS SITE CONDITIONS CHANGE DURING CONSTRUCTION.

PROJECT LOCATION/DESCRIPTION:

PROJECT/SITE NAME: MAIN STEM OF BASSETT CREEK RESTORATION PROJECT

PROJECT LOCATION: CITY: GOLDEN VALLEY & MINNEAPOLIS COUNTY: HENNEPIN STATE: MINNESOTA ZIP: 55427

LATITUDE/LONGITUDE: 44.990329 / -93.320103

CONTACT INFORMATION/RESPONSIBLE PARTIES:

OWNER/PERMITEE: MINNEAPOLIS PARK AND RECREATION BOARD (MPRB)
(ANDREA WEBER, PROJECT MANAGER)
2117 WEST RIVER ROAD
MINNEAPOLIS, MN 55411
(612) 230-6400

The MPRB has entered into contract with WSB & Associates for the development of the SWPPP. The MPRB is responsible for the maintenance of the creek and the easement areas associated with the project. The MPRB is the initial permittee applying for permit coverage and will be primarily responsible for developing and implementing this SWPPP. The MPRB is responsible for ensuring the implementation and maintenance of the Best Management Practices (BMPs) specified in SWPPP. The MPRB will ensure that described work in the SWPPP is being completed by the subcontractor. The MPRB will enter into contract with a chosen sub-contractor to complete the construction work necessary with the restoration of the eroding streambanks along Bassett Creek. The chosen sub-contractor will be a co-permittee on the NPDES permit.

CONTRACTOR/PERMITEE: T.B.D. (SWPPP AMENDMENT)
T.B.D.
T.B.D.
T.B.D.

The Chosen contractor will enter into a contract with the MPRB to complete the required work for the reconstruction for the restoration of eroding streambanks along Bassett Creek. The Chosen contractor will apply for joint coverage with the MPRB and has agreed to implement this SWPPP in cooperation with the City. The NPDES transfer Form shall be submitted to the MPCA within 7 days of awarding contractor. The Contractor will insure that individuals overseeing or implementing the SWPPP have been properly trained and that certifications will be made available upon request. This includes any sub-contractors that the General Contractor employees. The Contractor will perform a preconstruction site visit to address any areas of concern pertaining to Environmental Compliance. The Contractor will implement and maintain BMPs for the duration of construction on the road project. The Contractor will complete required inspections to remain in compliance with NPDES requirements. The Contractor will provide the contact information for the Superintendent, SWPPP Manager, Subcontractor SWPPP Coordinators and Utility SWPPP Coordinators.

SWPPP CONTACT: ERICK FRANCIS
701 XENIA AVE. SOUTH, SUITE 300
MINNEAPOLIS, MN 55416
763-541-4800 / efrancis@wsbeng.com

WSB & Associates has been contracted by the MPRB to complete the SWPPP Main Stem of Bassett Creek Restoration Project. SWPPP was prepared by an individual that has been properly trained to adhere to the requirements of the MPCA and the NPDES permit. Certification cards are available upon request. WSB & Associates will offer guidance for compliance with the NPDES permit.

TABLE 1. AGENCY CONTACTS

AGENCY	PERMIT	NAME	PHONE NUMBER/E-MAIL
MPCA (EMERGENCY)	N/A	State Duty Officer	1-800-422-0798
MPCA	NPDES	Tyler Hastings	651-757-2882/tyler.hastings@state.mn.us
ACOE	Section 404	Melissa Jenny	218-829-8402/melissa.m.jenny@usace.army.mil
DNR	N/A	Kate Drewry	651-259-5845 / kate.drewry@state.mn.us
City Golden Valley	WCA	Eric Eckman	763-593-8084/EEckman@goldenvalleymn.gov
Watershed District	N/A	Jim Herbert	952-832-2784 / jherbert@barr.com
SWPPP DESIGN	N/A	Erick Francis	763-541-4800 / efrancis@wsbeng.com
ESC SUPERVISOR	N/A	T.B.D.	T.B.D.

NATURE AND SEQUENCE OF CONSTRUCTION ACTIVITY:

The project includes the restoration of eroded streambanks along Main Stem of Bassett Creek. This project includes selective removal of trees, the shaping of eroded streambanks, and stabilization of the slopes with a verity of stabilization techniques. In addition, rock and cross vanes will be placed in selected locations along the reach to provide flow diversion and energy dissipation within the creek.

PRE-CONSTRUCTION ESTIMATES:

PRE-CONSTRUCTION IMPERVIOUS SURFACE AND DISTURBED AREA CALCULATIONS
Total Area to be disturbed = 4.5 Acres Impervious area: Pre-Construction = 0 Acres /Post-construction = 0 Acres
Net increase in impervious area = 0 Acres

TABLE 2. TENATIVE CONSTRUCTION SCHEDULE

Construction Activities:	Estimated Dates of Soil Disturbance Activities:
Clearing and grubbing	November 2013 - June 2014
Streambank shaping and slope stabilization	November 2013 - June 2014
Access restoration	November 2013 - June 2014
Two Year Warranty Period	November 2013 - June 2015

*Contractor should provide estimated construction schedule to the Engineer.

TABLE 3. LOCATION OF SWPPP COMPONENTS

DESCRIPTION	TITLE	LOCATION
TITLE SHEET/SUMMARY	STORMWATER POLLUTION PREVENTION PLAN	PLAN SET
SWPPP NOTES	SWPPP NOTES / PLAN SET	PROJECT MANUAL
SOILS/SURFACE WATERS MAP	SOILS MAPS	PROJECT MANUAL
DIRECTION OF FLOW	CONSTRUCTION PLAN	PLAN SET
RECEIVING SURFACE WATER	CONSTRUCTION PLAN	PLAN SET
TEMPORARY EROSION CONTROL	SWPPP PLAN	PLAN SET
PERMANENT EROSION CONTROL	CONSTRUCTION PLAN	PLAN SET
STORM SEWER	CONSTRUCTION PLAN	PLAN SET

ESTIMATED QUANTITIES FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL
See Bid Tabulation within the project specifications.

RECEIVING WATERS:

Description of receiving waters: Stormwater is directed into the Main Stem of Bassett Creek and eventually leads into the Mississippi River.

Description of impaired waters or water subject to TMDLs: A special and impaired waters search was completed using the MPCA search engine (http://pca-gis04.pca.state.mn.us/website/stormwater/sw/viewer.htm) on 4/10/2013. The Main Stem of Bassett Creek is listed as impaired, segment 07010206-538, by the MPCA. The Main Stem of Bassett Creek, is listed as Impaired for: Chloride, Fish Bioassessments, and Fecal Coliform. Appendix A of the NPDES CSW Permit applies to this project. The TMDL Study has not yet been completed for Bassett Creek.

ADDITIONAL BMPs FOR SPECIAL OR IMPAIRED WATERS DURING CONSTRUCTION ACTIVITY (APPENDIX A)
All requirements in Appendix A are in addition to BMPs already specified in the permit. Where provisions of Appendix A conflict with requirements elsewhere in the permit, the provisions in Appendix A take precedence. All BMPs used to comply with this Appendix must be documented in the SWPPP for the project (Appendix A.A).

C.1.a Exposed Soils: Contractor shall stabilize all exposed soil areas within a maximum of (7) days after the construction activity in that portion of the site has temporarily or permanently ceased (Appendix A.C.1.a). Please see the General notes for further details on soil stabilization along the creek banks, which outlines a 48 hour soil stabilization requirement.

C.3 Buffer zone: An undisturbed buffer zone of not less than 100 linear feet from the special water (not including tributaries) cannot be maintained at all times during the construction phase of this project due to the shaping, stabilization, and vegetation restoration along the creek. Exceptions from this requirement for areas, such as water crossings, limited water access and restoration of the buffer are allowed if the Permittee fully documents in the SWPPP the circumstances and reasons that the buffer encroachment is necessary. Replacement of existing impervious surface within the buffer is allowed under this permit. All potential water quality, scenic and other environmental impacts of these exceptions must be minimized by the use of additional or redundant BMPs and documented in the SWPPP for the project.

701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
763-541-4800 Fax 763-541-1700
WSB & Associates, Inc.
INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

MAIN STEM OF BASSETT CREEK
RESTORATION PROJECT
MINNEAPOLIS PARK AND
RECREATION BOARD, MINNESOTA

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

DATE: 07/16/2013 LIC. NO. 15998 ENGINEER

SCALE: AS NOTED
PLAN BY: ESF
DESIGN BY: ESF
CHECKED BY: FH
PROJECT NO. 01165-82
RECORD COPY BY: DATE

REVISION NO. DATE EXPLANATION

ENVIRONMENTALLY SENSITIVE AREAS:

Contaminated Properties: 3 is an abbreviation of potentially contaminated properties within or adjacent to the project limits. No pre-existing hazardous materials or wastes are anticipated to be impacted by the project.

TABLE 4. POTENTIAL CONTAMINATED PROPERTIES

	RISK CLASSIFICATION	ENVIRONMENTAL CONCERNS
	Low	Equipment & material storage observed
	Low	Former filling station, LUST, reported spills, undocumented UST removed, remediation AST removed
	Low	Unregulated waste disposal; potential historic dump site
	Low	Unregulated waste disposal
	Low	Potential transformers
	Low	Potential oils containing PCB's
	Low	Stressed vegetation observed
	Low	Unregulated waste disposal
	Low	Drums and poor housekeeping observed, non-regulated AST
	Low	Historic runoff and prior use of paints, solvents, petroleum products
	Low	Hazardous waste producing very small quantity generator
	Low	Waste equipment, and drums observed; Hazardous Waste producing very small quantity generator
	Low	Regulated waste (Railroad ties)

Endangered, Threatened, Special Concern Species: No state of federally (Section 7 ESA) listed threatened/endangered/special concern species are known to exist within or adjacent to the project limits. The results of this review are available upon request.

Archeological, Cultural Resources, & Historic Properties: A Section 106 review (National Historic Preservation Act) was conducted. The project will have no adverse effect on historic properties or archeological resources. The results of this review are available upon request.

Wetlands
There is an isolated wetland at the southerly end of the project. The City has issued a No-Loss Determination for any impacts that may occur during construction.

POTENTIAL SOURCES OF POLLUTION:

TABLE 5. POTENTIAL SOURCES OF SEDIMENT TO STORMWATER RUNOFF

(Check if pollutant applies to site.)

- ☒ Installation of sediment and erosion controls
- ☒ Installation stabilized exits
- ☒ Vehicle tracking
- ☒ Clearing and grading operations
- ☒ Grading operations
- ☒ Exposed soils and slopes
- ☒ Import/export operations
- ☒ Utility excavation operations
- ☒ Landscaping operations
- ☒ Topsoil stripping and stockpiling
- ☒ Fine grading
- ☐ Other potential services of sedimentation (if needed):
- ☐ Other potential services of sedimentation (if needed):

TABLE 6. CONSTRUCTION ACTIVITIES ASSOCIATED WITH POLLUTANTS

(Check if pollutant applies to site.)

Activity Type	Pollutant	Visually Observable
Soil Disturbance		
☒ Clear/grub	Sediment and organics	Cloudy to opaque
☒ Remove/compact	Sediment	Cloudy to opaque
☒ Fine grading	Sediment	Cloudy to opaque
☒ Trenching	Sediment	Cloudy to opaque
☒ Stockpiling	Sediment	Cloudy to opaque
☒ Landscape	Containers, mulch, soil, organic materials	Varies

TABLE 6. CONSTRUCTION ACTIVITIES ASSOCIATED WITH POLLUTANTS

(Check if pollutant applies to site.)

Activity Type	Pollutant	Visually Observable
Soil Disturbance		
	Visually observable	

POLLUTION PREVENTION MANAGEMENT MEASURES

Contractor will comply with pollution prevention and management measures. Contractor will submit a spill prevention and containment plan to the engineer prior to any construction activity.

Solid Waste: (sediment, asphalt, concrete millings, construction, and demolition debris) and other wastes must be disposed of properly and shall comply with MPCA disposal requirements.

Hazardous Material: (e.g. gas, oil, antifreeze, paint, cleaning solvents curing compounds, fertilizers, etc.) must be properly stored, with necessary spill containment. Restricted access must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.

Proper Equipment/Vehicle Fueling and Maintenance Practices: When vehicle fueling must occur on-site, the fueling activity will occur in the staging area. Absorbent, spill cleanup materials and spill kits will be available at the combined staging and materials storage areas.

Trucks and other Construction Equipment: External washing, engine degreasing, or other maintenance involving hazardous liquids or lubricants is prohibited on site.

Concrete/Stucco Washout Onsite: Contractors/site operator must submit a concrete washout plan to the project engineer for approval. Slurry must be contained in a leak-proof containment facility, impermeable liner, or immediately hauled off-site. A two (2) foot compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner, with prior approval from project engineer. All liquid and solid wastes must not contact the ground, and there must not be runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities (Part IV.F.4). The approved plan will be incorporated into the SWPPP.

Burning: Burning of garbage, construction debris, trees, brush, or other vegetative material is not allowed on site, unless prior approval is granted by the project engineer.

APPLICABLE FEDERAL, TRIBAL, STATE OR LOCAL PROGRAMS:

The project falls under the jurisdiction of several entities: State NPDES permit for construction activity and Army Corps of Engineers.
The more stringent of Local vs. State vs. Federal rules shall apply where they conflict. Information pertaining to the State NPDES permit can be found at: (http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/construction-stormwater/construction-stormwater.html?menuid=&redirect=1)

SEQUENCE OF CONSTRUCTION/TIMING OF BMP INSTALLATION:

No construction operations, including removals, that require erosion & sediment control per the SWPPP can commence until the Contractor's erosion control supervisor certifies the proper installation of BMP's and a chain of responsibility for SWPPP implementation is created for all operators on the site. Perimeter sediment controls (silt fence, inlet protection, construction entrances, etc.) shall be installed prior to the start of construction. These practices shall remain in place until Final Stabilization is achieved.

Contractor shall implement the necessary on site BMP's in accordance with the NPDES permit requirements to prevent nuisance conditions (MN Rules 7050.0210) from any discharges under coverage of the NPDES permit. In some cases, multiple or redundant applications of some BMP's may be needed to meet these requirements.

INSPECTION, RECORD KEEPING, & SWPPP AMENDMENTS

1. The contractor/site operator must inspect the entire construction site at least once every seven (7) days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.

2. All inspections and maintenance conducted must be recorded in writing and retained with the SWPPP in accordance with Part III.D of the NPDES construction permit. Amendments to the SWPPP will be made by the project engineer or the contractor after written approval by the project engineer. Records of each inspection and maintenance activity shall include:
   a. Date, Time, and Name of person(s) conducting inspections;
   b. Findings of inspections, including recommendations for corrective actions;
   c. Corrective actions taken (including dates, times, and party completing maintenance activities); including Documentation/Photos of implemented BMPs intended to correct a problem but failed.
   d. Date and amount of all rainfall events greater than 1/2 inch (0.5 inches) in 24 hours;
   e. Documentation of changes made to the SWPPP

3. The SWPPP shall be amended to include additional or modified BMPs, designed to correct identified problems or address situations under Part III.A.3 of the NPDES permit.
   a. There is a change in design, construction, operation, maintenance, weather or seasonal conditions that has a significant effect on the discharge of pollutants to surface waters or underground waters;
   b. Inspections or investigations by site operators, local, state or federal officials indicate the SWPPP is not effective in eliminating or significantly minimizing the discharge of pollutants to surface waters or underground waters or that the discharges are causing water quality standard degradation (e.g. nuisance conditions as defined in Minn. R. 7050.0210, subp. 2); or
   c. The SWPPP is not achieving the general objectives of minimizing pollutants in stormwater discharges associated with construction activity, or the SWPPP is not consistent with the terms and conditions of this permit.

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DATE: 07/16/2013 ENGINEER LIC. NO. 15998

SCALE: AS NOTED | DESIGN BY: ESF | PLAN BY: ESF | PROJECT NO: 1165-82 | CHECKED BY: PH | RECORD COPY BY: | DATE

REVISION NO. | DATE | EXPLANATION

MAIN STEM OF BASSETT CREEK
RESTORATION PROJECT
MINNEAPOLIS PARK AND
RECREATION BOARD, MINNESOTA

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
INFRASTRUCTURE | ENGINEERING | PLANNING | CONSTRUCTION
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d. The MPCA notifies the Permittee(s) in writing that the project's stormwater discharges may contribute to non-attainment of any applicable water quality standards, impaired waters standards, and/or TMDL Waste Load Allocations. In response, the Permittee(s) must develop a supplemental BMP action plan or appropriate SWPPP

4. The SWPPP (original or copies), all changes to the SWPPP, project manual, and inspections/maintenance records must be kept at the site during construction by the contractor/s or operator who has operational control of that portion of the site. The SWPPP can be kept in either the field office or on site vehicle during normal working hours.

5. The contractor/site operator must assign a trained individual(s) (pursuant to Part III.A.1-2) to oversee the implementation, maintenance, and repair of BMPs. This individual(s) shall also perform inspections, revise/amend the SWPPP (document in SWPPP as necessary), and be available for an onsite inspection within 72 hours upon request by the permitted owner (or its designee), local government units, or MPCA (Part III.A.2.a.ii).

EROSION CONTROL PRACTICES

All exposed soil areas shall be stabilized within 7 days after the construction activity in that portion of the site has temporarily or permanently ceased. All slopes 3:1 or steeper must be less than 75 feet in length. All 3:1 slopes (or steeper) greater than 75 feet shall be graded in phases and stabilized, or broken into less than 75 foot lengths with appropriate perimeter control BMPs (silt fence, biorolls, etc.). Temporary stockpiles without significant silt, clay or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) and the constructed base components of roads, parking lots and similar surfaces are exempt from this requirement. The project area will potentially be left native over the 2012-2013 winter season. All exposed soils shall be stabilized before construction is completed for the 2012 season.

TEMPORARY

Mulch Material Type 1: This work shall consist of operations necessary to rapidly stabilize small critical areas within 200ft of Surface Waters, to prevent off site sedimentation and or to comply with permit requirements. Install per MnDOT specifications 2575.3N.

Temporary/Permanent Drainage Ditches & Swales: The normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connecting to a surface water. Mulch, hydromulch, and rock/filter below the wetted perimeter of a ditch, swale, or other surface water conveyance is not acceptable stabilization.

Temporary or permanent ditches or swales that are being used as a temporary sediment containment system (with properly designed rock ditch checks, bio rolls, silt dikes etc.) do not need to be stabilized. These areas must be stabilized within 24 hours after no longer being used as a sediment containment system.

Dust Control: Dust from the site will be controlled by using a mobile pressure-type distributor truck to apply potable water to disturbed areas. The mobile unit will apply water at a rate necessary to prevent runoff and ponding.

Temporary Winter Cover: Areas of exposed soils that are not completed before the winter will be stabilized with Type #3 (certified as Weed Free) adjacent to wetland or stormwater ponds. All other disturbed areas shall be stabilized with Type #1 mulch, unless alternative more protective BMPs are specific within the SWPPP.

PERMANENT

Preservation of Existing Vegetation: The preserved areas of existing vegetation will be identified on the plan sheets as "Do Not Disturb Areas".

Mulch Material Type 1: This work shall consist of operations necessary to rapidly stabilize small critical areas within 200ft of Surface Waters, to prevent off site sedimentation and or to comply with permit requirements. Install per MnDOT specifications 2575.3N.

Erosion Control Blankets/Mats: Contractor shall verify during regular inspections that no gullies, rills, or scour holes have formed under erosion control blankets and mats, and correct all eroded areas within 7 days. All repairs must be completed within 24 hours of discovery, or as soon as field conditions allow access

Storm Sewer Outlets: Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours after hydraulic connection to a surface water.

SEDIMENT CONTROL PRACTICES

The contractor/the operator are responsible for the installation, operation, and continued maintenance of all temporary and permanent water quality management BMPs, as well as all erosion prevention and sediment control BMPs, for the duration of the construction work at the site, until final stabilization is achieved. All BMPs must be adequately designed, installed, and maintained to prevent erosion from a minimum 0.5 inch total rainfall event within 24 hours.

All nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow access unless another time frame is specified in the SWPPP. All eroded material that leaves the site shall be collected by the contractor and returned to the site at the contractor's expense and incidental to the project cost.

Down gradient systems: If the down gradient treatment system is overloaded, additional up gradient sediment control practices or redundant BMPs must be installed to eliminate the overloading, and the SWPPP must be amended to identify these additional practices.

Silt fences: Silt fences shall be placement, as close as possible to follow a single contour elevation. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. All repairs must be completed within 24 hours of discovery, or as soon as field conditions allow access

Floating Silt Curtain: The curtain shall be constructed with connecting devices at each end so that sections can be joined together. Connecting devices shall be designed to prevent silt from penetrating through the connection, and at the specified strength to prevent ripping out. The depth of the curtain shall be a minimum of 0.6 m (2 feet) to a maximum of 3.0 m (10 feet). Unless otherwise specified in the Contract, the depth of curtain shall be 1.2 m (4 feet). Installation shall typically be on the bottom of the water body.

Moving Water: The curtain shall be anchored out in the waterway in a herring bone configuration. The curtain shall be placed at an approximate 30 degree angle from shore, pointing up stream. Curtains shall not be placed across flowing water courses. Anchors shall be 136 kg (300 pounds) and located a maximum of 14.2 m (50 feet) spacing along the curtain. Each anchor shall be marked by a buoy. One end of the curtain shall be secured to land.

Work Area: The curtain shall extend at a 45 degree angle from both ends secured to shore to enclose the work area. The work area shall extend a maximum of ¼ of the stream width. The curtain shall extend a maximum of ½ of the stream width. The curtain shall be anchored out in the waterway with a minimum of 18 kg (40 pounds) at a maximum of 30 m (100 feet) intervals along the length of the curtain.

Temporary Stockpiles: All stockpiles must have silt fence or equivalent perimeter sediment controls implemented and maintained at all times. Piles cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches unless there is a bypass in place to prevent stormwater run-on into the stockpile (Part IV.C.5).

Construction Site Entrance/Vehicle Tracking: Contractor must minimize sediment from leaving the construction site (or onto streets within the site) by implementing BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used daily during construction operations if such BMPs are not adequate to prevent sediment from being tracked onto the street. Tracked sediment must be removed from all paved surfaces within 24 hours of discovery, or sooner as directed by the project owner to comply with Part IV.C.5 of the NPDES construction permit. Multiple street sweepings at the contractor's expense may be required on all entry/exit points to the site at the discretion of the Project Owner.

Surface Waters: Including off-site and downstream drainage ditches, catch basins, and conveyance systems, must be inspected for evidence of erosion and sediment deposition. The removal and stabilization of exposed soils must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints. If precluded, removal and stabilization must take place within seven (7) calendar days of obtaining access. The Permittees are responsible for contacting all local, regional, state and federal agencies and receiving any applicable permits, prior to conducting any work (Part IV.E.4.c).

Inlet Protection: All storm drain inlets (including down gradient, off-site) must be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized. Silt fence is not an acceptable catch basin inlet protection BMP. Contractor shall clean, remove and dispose of sediment, and/or replace storm drain inlet protection on a routine basis to ensure the device is fully functional prior to the next forecasted precipitation event (30% or greater). Inlet protection may be removed for a particular inlet if a specific safety concern (street flooding/freezing) has been identified and the Permittee(s) have received written correspondence from the jurisdictional authority (e.g. city/county/township/MnDOT engineer) verifying the need for removal. Written correspondence must be documented in the SWPPP and available within 72 hours upon request. Permission to remove inlet protection based on a specific safety concern must still be obtained from the local jurisdictional authority within 30 days of removal (Part IV.C.4).

DEWATERING AND BASIN DRAINING

Dewatering or basin draining is anticipated during construction of this project. Ditch realignment, culvert construction, and new pond grading will require site dewatering. When dewatering or basin draining is required, the contractor shall submit a dewatering plan and narrative to the Project Engineer for approval prior to undertaking these activities. Dewatering plan must include BMP's to prevent sediment transport, erosion, and adverse impacts to downstream receiving waters. If an approved TMDL Waste Load Allocation is established for construction activities on a receiving waterbody, the contractor must implement all necessary BMP's to meet the assigned WLA. The dewatering plan and DNR appropriations permit will become part of the SWPPP. Water that is turbid or has sediment must be discharged to a temporary or permanent sedimentation basin (and/or other appropriate BMPs) on the project site whenever possible. Discharge from the temporary or permanent sedimentation basin must be visually checked to ensure adequate treatment is obtained in the basin and that nuisance conditions (see Minn. R. 7050.02 10, subp. 2), impacts to wetlands, and erosion in receiving channels or on downslope properties will not result from the discharge. The discharge must be dispersed over natural rock riprap, sand bags, plastic sheeting, or other accepted energy dissipation measures. Adequate sedimentation control measures are required for discharge water that contains suspended solids (Part IV.D.1).

FINAL STABILIZATION

Final Stabilization is achieved when the following three parameters are completed, prior to submission of the NOT to MPCA. See Permanent Erosion Control Practices for specific applications.

1. 70% Vegetative Cover: All soil disturbing activities at the site have been completed and all exposed soils are stabilized by a uniform, live perennial vegetative cover with a density of 70% over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions.

2. Final Clean out of Permanent Stormwater Management Systems & Conveyance Systems: All sediment must be removed from permanent stormwater management systems, conveyance systems, and ditches must be stabilized with permanent cover.

3. Removal of all Temporary BMPs: Prior to submission of the NOT, all temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) must be removed on the portions of the site for which the Permittee is responsible. BMPs designed to decompose on site (such as some compost logs) may be left in place.

PAYMENT TO CONTRACTOR

Payment for construction practices and materials associated with the maintenance or repair of BMPs designated in the original tabulated quantities of this project SWPPP are incidental costs to the contractor for this project. Contractor recommendations for additional or revised BMPs needed to comply with NPDES permit requirements and/or to prevent nuisance conditions shall be submitted to the project engineer for approval. All eroded material that leaves the site shall be collected by the contractor and returned to the site at the contractor's expense and incidental to the project cost.

REVISION NO.	DATE	EXPLANATION

SCALE: AS NOTED
PLAN BY: ESF
DESIGN BY: ESF
CHECKED BY: PH
PROJECT NO. 1165-82
RECORD COPY BY: DATE

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

ENGINEER
DATE: 07/16/2013 LIC. NO. 15998

MAIN STEM OF BASSETT CREEK
RESTORATION PROJECT
MINNEAPOLIS PARK AND
RECREATION BOARD, MINNESOTA

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
P: 763-541-4800 Fax: 763-541-1700
INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

EROSION AND SEDIMENT CONTROL NOTES:
LOCATION OF SILT FENCE SHOWN ON THE PLAN IS APPROXIMATE AND WILL BE STAKED IN THE FIELD PRIOR TO CONSTRUCTION.

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EXPOSED SOILS IMMEDIATELY ADJACENT TO THE CREEK, WHICH ARE NOT ACTIVELY BEING WORKED MUST TO BE STABILIZED WITHIN 48 HOURS WITH A TEMPORARY SEED MIX AND STRAW MULCH.

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ROCK CONSTRUCTION ENTRANCES MUST BE INSTALLED AT EACH ACCESS POINT PRIOR TO COMMENCING WORK.

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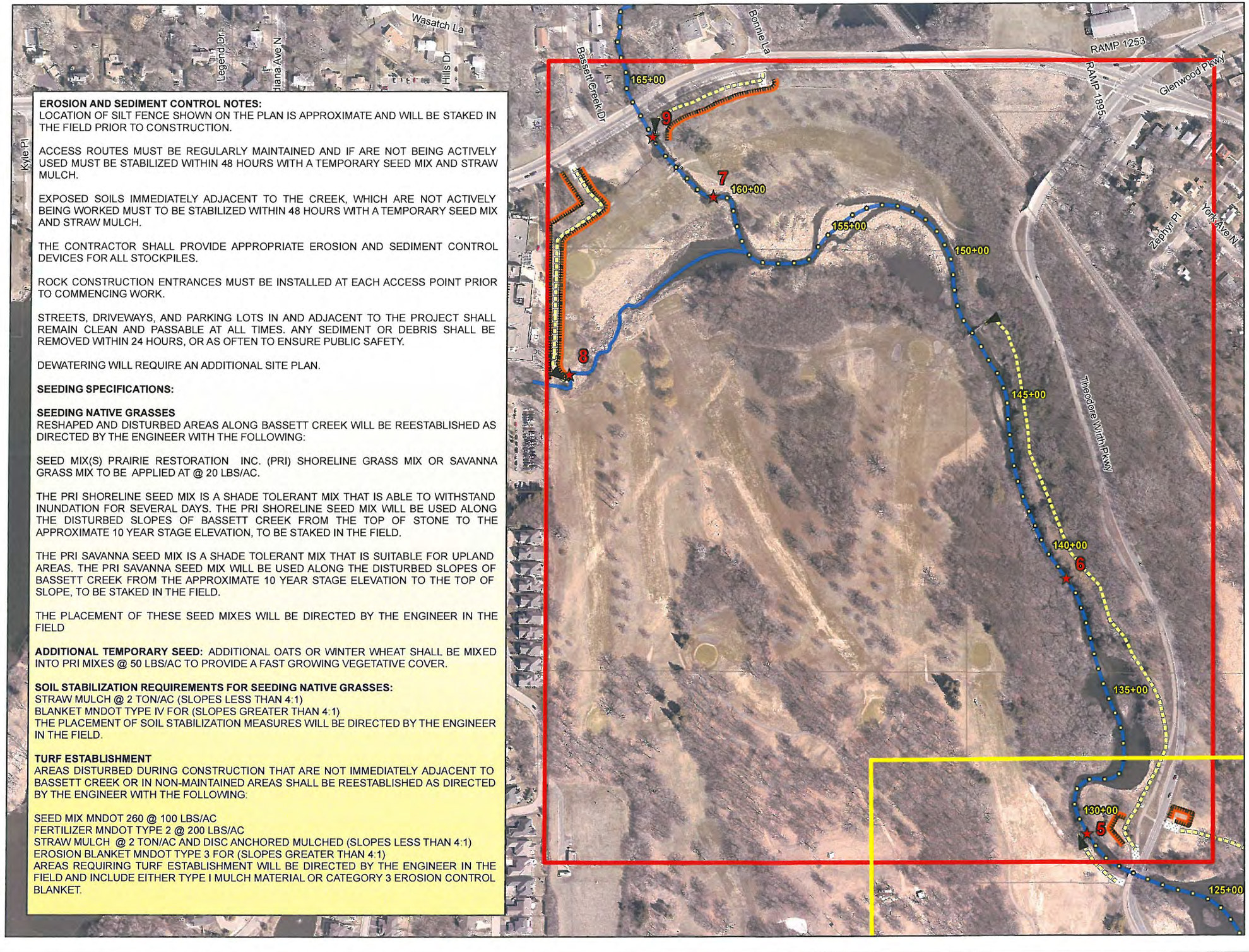

Main Stem of Bassett Creek Restoration Project

Construction Notes
Area A
Station 165+00-130+00

Legend
- A
- B
- C
- BCWMC Maintenance Locations
- Access_Route
- Silt_Fence
- Construction_Entrance
- City Boundary
- Bassett_Creek
- Property Boundary

N

0 100 200 400 Feet

WSB & Associates, Inc.

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ENGINEER

DATE: 07/16/2013 LIC. NO: 15998

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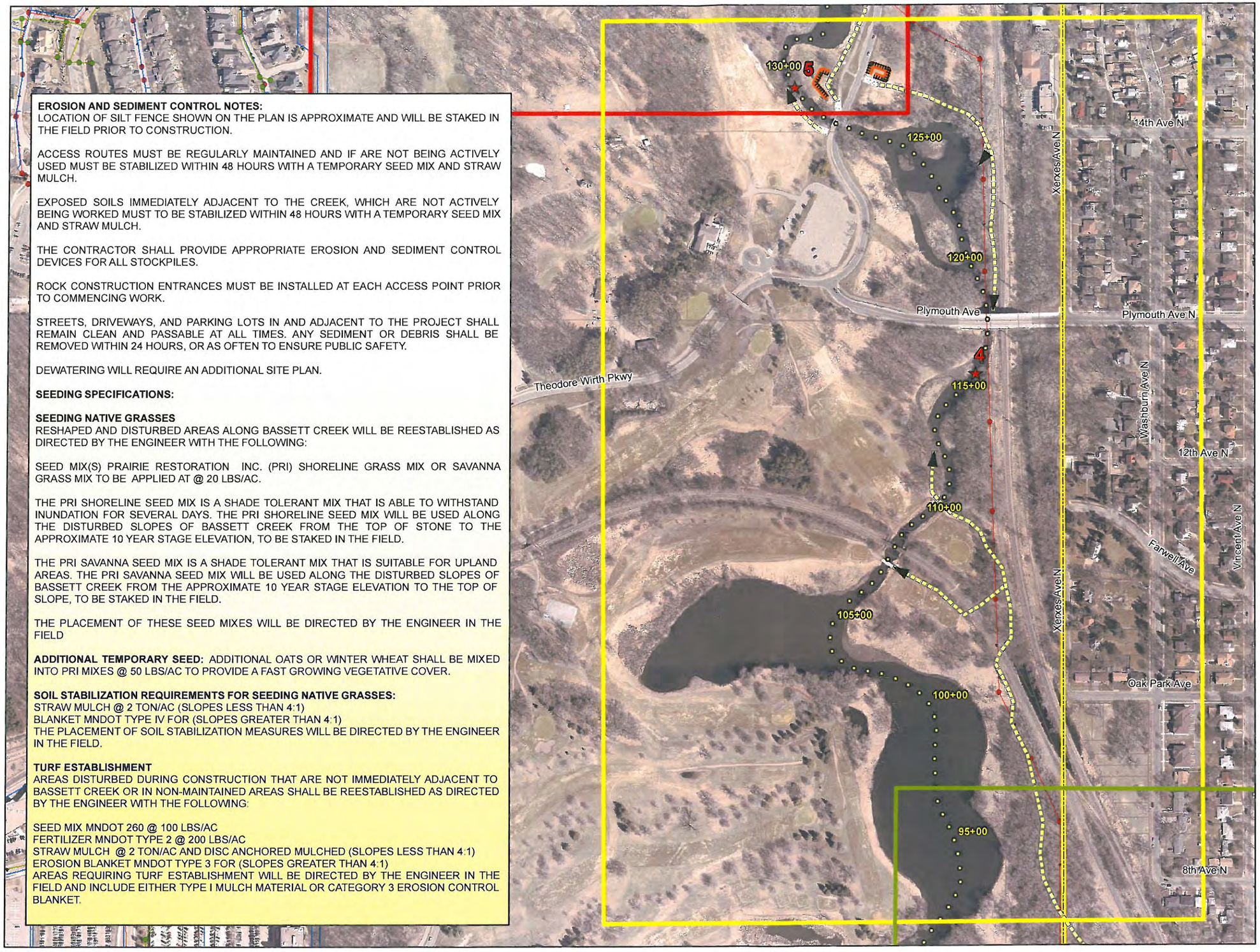

Main Stem of Bassett Creek Restoration Project

SWPPP
Area B
Station 165+00-130+00

Legend

- BCWMC Maintenance Locations
- A
- B
- C
- Access_Route
- Silt_Fence
- Construction_Entrance
- CreekStationing
- City Boundary
- Storm Sewer Manholes
- Storm Sewer
- Watermain
- Sanitary Sewer
- Sanitary Sewer Manhole
- Property Boundary

N

Feet

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ENGINEER

DATE: 07/16/2013 LIC. NO: 15998

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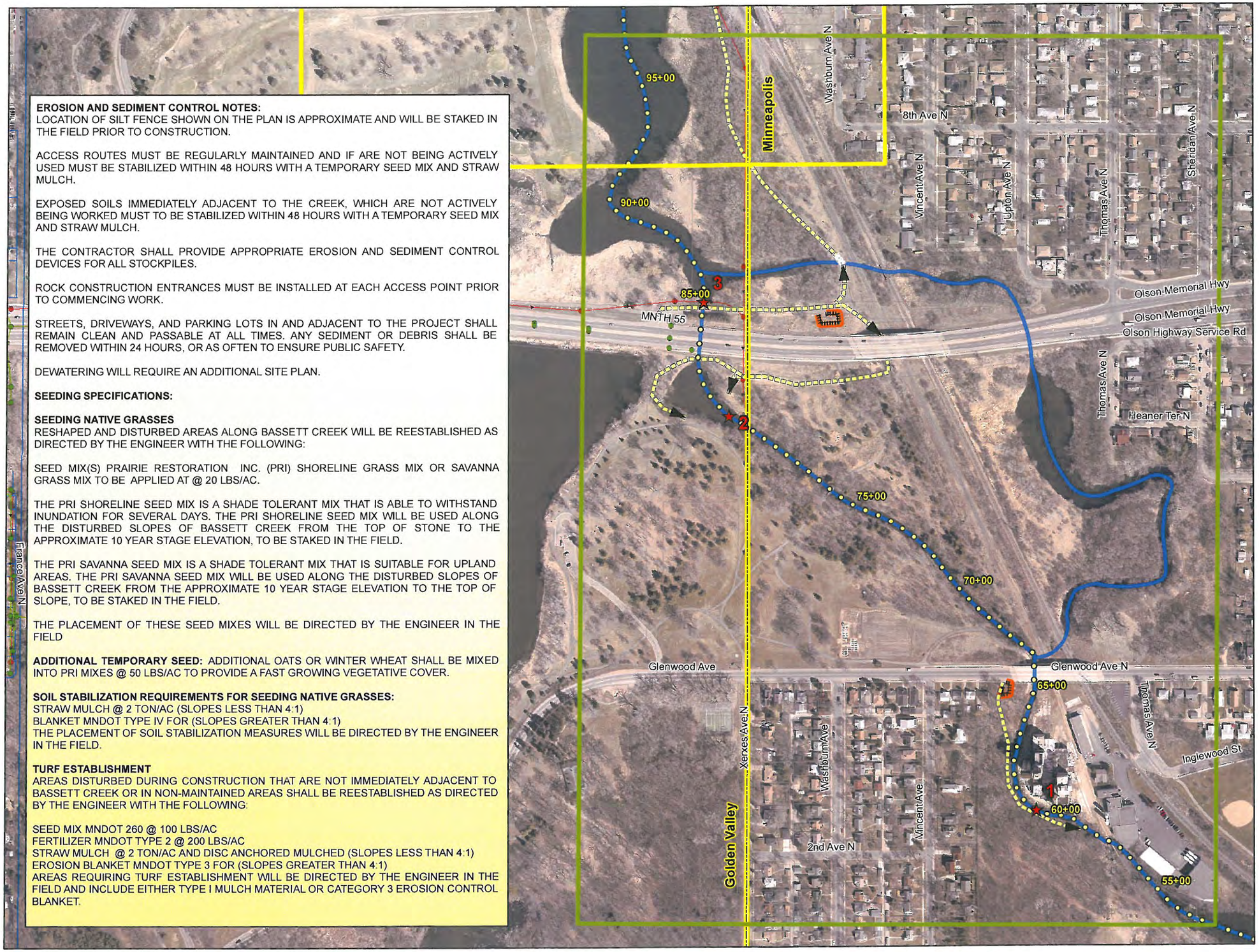

Minneapolis Park & Recreation Board

Bassett Creek Watershed Management Commission

Main Stem of Bassett Creek Restoration Project

SWPPP
Area C
Station 95+00-60+00

Legend

- BCWMC Maintenance Locations
- A
- B
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- Sanitary Sewer Manhole
- Parcels

N

Feet

WSB

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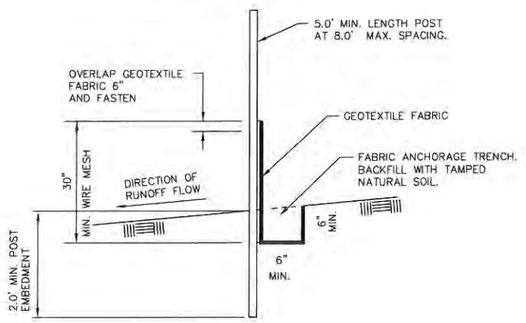
ENGINEER

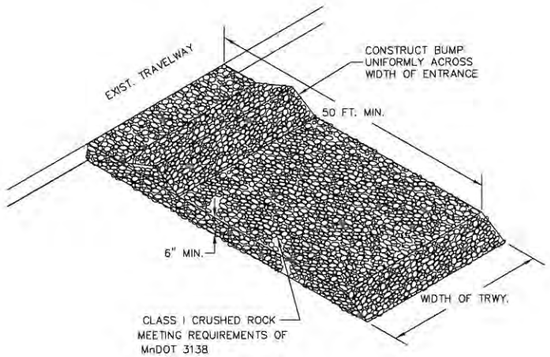
DATE: 07/16/2013 LIC. NO: 15998

SHEET 25 OF 26 SHEETS

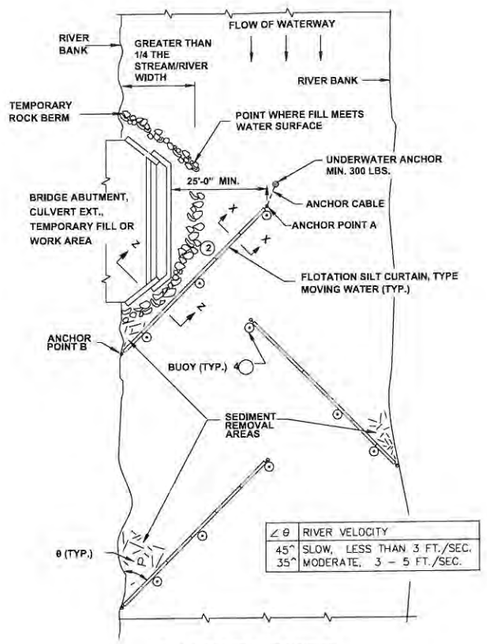
SILT FENCE



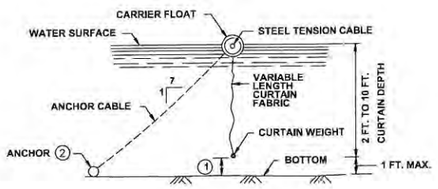
ROCK CONSTRUCTION ENTRANCE



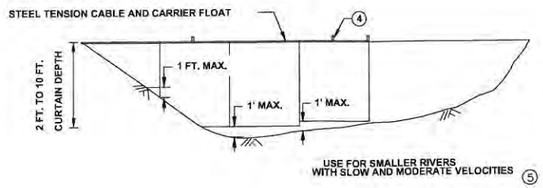
FLOATING SILT CURTAIN DETAIL



PLAN VIEW (TYPE: MOVING WATER)

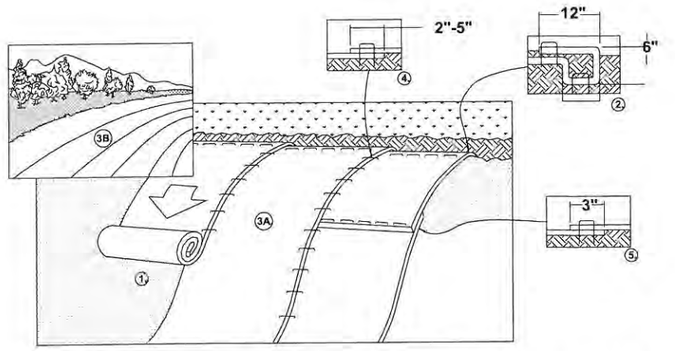


SECTION X-X



USE FOR SMALLER RIVERS WITH SLOW AND MODERATE VELOCITIES (5)

EROSION CONTROL BLANKET INSTALLATION DETAIL



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.

2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.

3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.

4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.

5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

NOTE:
*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

REVISION NO. | DATE | EXPLANATION

SCALE: AS NOTED
PLAN BY: ESF
DESIGN BY: ESF
CHECKED BY: PH
PROJECT NO. 1165-82
DATE
RECORD COPY BY:

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MAIN STEM OF BASSETT CREEK
RESTORATION PROJECT
MINNEAPOLIS PARK AND
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EROSION AND SEDIMENT CONTROL DETAILS
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