Information for File 2015-03257-MMJ
2015 Bassett Creek Restoration Project – Golden Valley

Applicant: City of Golden Valley

Corps Contact: Melissa Jenny

Address: Corps of Engineers, St. Paul District, Regulatory Branch (Attn: 2015-03257-MMJ),

180 East Fifth Street, Suite 700, St. Paul, MN 55101-1678

E-Mail : Melissa.m.jenny@usace.army.mil

Phone: 651-290-5363

Primary County: Hennepin

Section, Township, Range: 28, 29 & 32, T. 118 N., R. 21 W.

Information Complete On: September 11, 2015

Posting Expires On: September 21, 2015

Authorization Type: Section 404 Letter of Permission (LOP-05-MN)

This application is being reviewed in accordance with current practices for documenting Corps jurisdiction under Section(s) 9 & 10 of the Rivers and Harbor Act of 1899 and Section 404 of the Clean Water Act.

We have made a preliminary determination that the aquatic resources that would be impacted by the proposed project are subject to Corps of Engineers jurisdiction under Section(s) 9 & 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act. If an approved jurisdictional determination is completed as part of the review process for this application, a copy will be posted on the St. Paul District web page at the following link: http://www.mvp.usace.army.mil/Missions/Regulatory.aspx.

PROJECT DESCRIPTION AND PURPOSE:

The proposed Bassett Creek Restoration Project would involve bank stabilization and native vegetation restoration activities along selected areas of an approximately 11,000 linear foot portion of Bassett Creek, located between Rhode Island Avenue North and Duluth Street, in the City of Golden Valley.

The proposed project would stabilize approximately 5,200 linear feet of stream bank, at five separate locations. The project would include both soft and hard bank stabilization techniques including: slope shaping, bio-logs, live fascines, vegetated reinforced slope stabilization (VRSS), root wads, rock vanes, live stakes and riprap. The project would also include the reestablishment of native vegetation at all of the work sites.

Bassett Creek from Medicine Lake to the Mississippi River is listed as an impaired water on the State list for Aquatic Recreation – Fecal Coliforms and for Aquatic Life – Fish Bioassessments and Chloride. The proposed project should not increase any of the impairments on the main stem of the creek, and it should reduce sedimentation and increase the stream's biological capacity to filter and clean water.

NAME, AREA AND TYPES OF WATERS (INCLUDING WETLANDS) SUBJECT TO LOSS:

Construction activities associated with the project would temporarily impact approximately 0.10 acre of wetland adjacent to the creek, between stations 71-80 as shown on the attached Figure 2, and detailed on Page 16 of 27 within the attached project construction plans.

The shallow, relatively narrow creek (at most points around 10 to 15 feet wide) would not be adversely affected, apart from the disturbances during construction, and the area is expected to have greater habitat value once the plantings establish. The total area of stream bed disturbed during the project would be approximately 0.78 acre.

ALTERNATIVES CONSIDERED:

Various alternatives were considered, and the proposed project is a combination of measures intended to minimize environmental impacts, increase the aesthetics of the project area, and maximize water quality and other environmental benefits. Other alternatives would have either reduced the restored area or increased the area of hard bank protection (primarily riprap).

COMPENSATORY MITIGATION:

This bank stabilization project is intended to improve the resource. The project would not result in the loss of wetland functions, and the stream banks would be enhanced with the planting of native vegetation. Compensatory mitigation would not be required for this project.

Drawings: See attached.

Figure 1: Project Location

Bassett Creek Restoration
Golden Valley, MN

0 250 500 1,000 1,500 2,000 Feet

N

city of golden valley

WSB & Associates, Inc.

Figure 2: Wetland Impacts

Bassett Creek Restoration
Golden Valley, MN

0 20 40 80 120 160 Feet

N

2015 BASSETT CREEK RESTORATION PROJECT
FOR THE
CITY OF GOLDEN VALLEY

CONSTRUCTION PLAN FOR: STREAMBANK STABILIZATION AND HABITAT RESTORATION LOCATED ON BASSETT CREEK

PROJECT LOCATION: RHODE ISLAND AVE TO DULUTH STREET

PLAN SYMBOLS

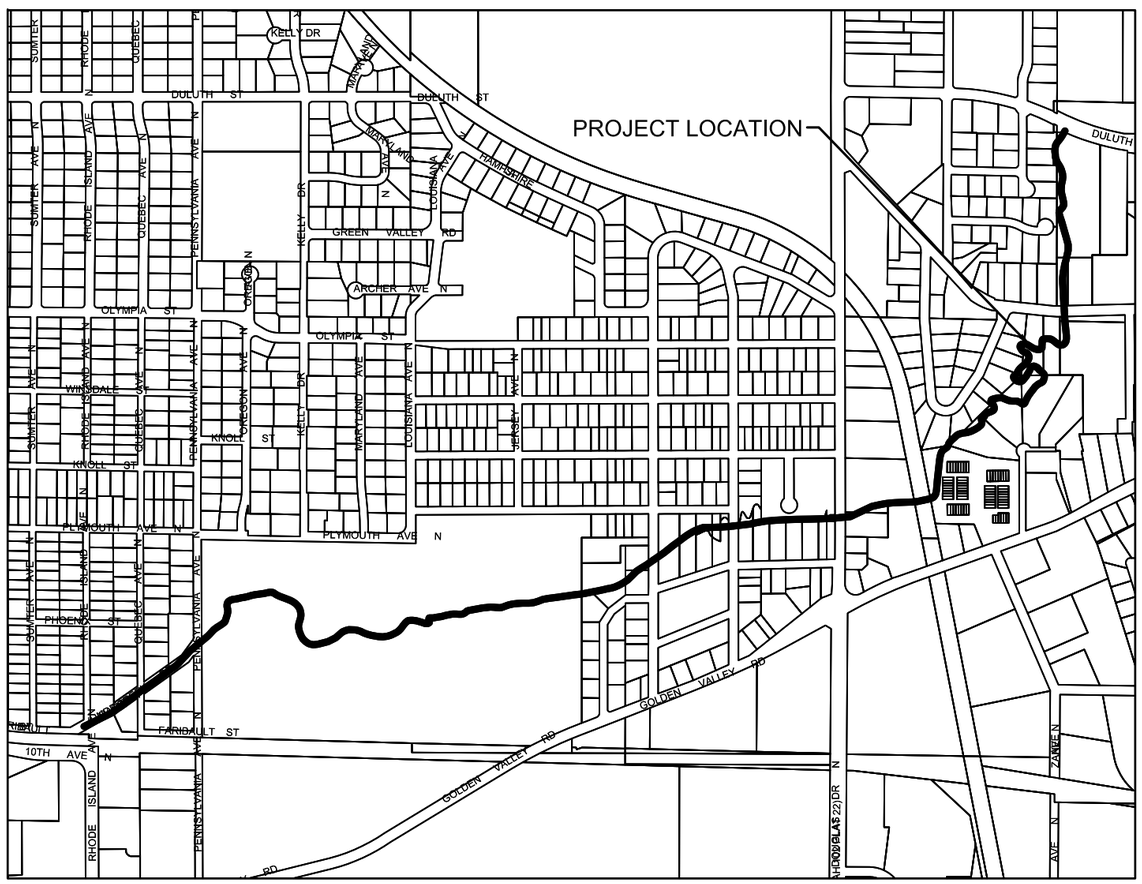
STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
SLOPE EASEMENT (SE)
PRESENT RIGHT-OF-WAY
CONTROL OF ACCES LINE
PROPERTY LINES (EXCEPT LAND LINES)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
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
SAND PIT
BORROW PIT
ROCK QUARRY

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



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

2015 BASSETT CREEK RESTORATION PROJECT SPECIAL PROVISIONS
2015 BASSETT CREEK PLANS
CITY OF GOLDEN VALLEY GENERAL CONDITIONS
CEAM STANDARD SPECIFICATIONS
THE 2014 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 2014. ALL TRAFFIC CONTROL DEVICES SHALL HAVE RETROREFLECTIVE SHEETING.

STORM SEWER SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY ENGINEERS ASSOCIATION OF MINNESOTA STANDARD UTILITIES SPECIFICATIONS.

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES
3–6	STREAMBANK STABILIZATION DETAILS
7	IMPROVEMENT LOCATION OVERVIEW MAP
8–12	CONSTRUCTION LIMITS & ACCESS MAPS
13–17	CONSTRUCTION PLAN
17–22	EROSION & SEDIMENT CONTROL PLAN
23	STORM SEWER PLAN & PROFILE
24–27	SWPPP NARRATIVE

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
PETER R. WILLENBRING, P.E.
DATE 7/29/2015 LIC. NO. 15998

PLAN REVIEW:

Prepared for:

City of Golden Valley
7800 Golden Valley Road
Golden Valley, Minnesota 55427
(763)-593-8000

WSB PROJECT 2032-090
CITY PROJECT NO. 13-25

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. IT SHOULD BE NOTED THAT EARTHWORK FOR THIS PROJECT WILL LIKELY NOT BALANCE AND THAT IMPORTED MATERIALS WILL REQUIRE AN EQUAL (OR NEAR EQUALL VOLUME OF MATERIAL REMOVED.

SLOPE SHAPING

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). CONTRACTOR TO BALANCE MATERIALS ON SITE TO THE MAXIMUM EXTENT FEASIBLE. IN AREAS WHERE MATERIAL CANNOT BE BALANCED ON SITE, THE EXCESS MATERIAL SHALL BE REMOVED AND PAID FOR BY THE COMMON EXCAVATION CONTRACT ITEM.

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.**

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 - **NOTE NATIVE SEEDING SHALL NOT BE PLANTED UNTIL THE SPRING**

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
- **TEMPORARY COVER AND SEED:** FOR WINTER WORK, A TEMPORARY COVER CROP OF MNDOT 21-112 WINTER WHEAT SHALL BE PLACED AT 145 LBS/ACRE

SOIL STABILIZATION REQUIREMENTS FOR SEEDING NATIVE GRASSES:

- **STRAW MULCH** @ 2 TON/AC (SLOPES LESS THAN 4:1)
- **BLANKET** MNDOT TYPE III (NATURAL NETTING) 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:

- **SOD: TYPE MINERAL OR HIGHLAND. PEAT SOD WILL NOT BE ACCEPTED.**
- **SOD SHALL BE PLACED ON 6" OF TOPSOIL, SALVAGED OR IMPORTED, AS DIRECTED BY THE ENGINEER.**
- **SEE SUPPLEMENTARY SPECIAL PROVISIONS FOR FURTHER INFORMATION.**

REVISION NO. DATE	EXPLANATION

SCALE: AS NOTED
PLAN BY: JHA | DESIGN BY: JHA
CHECKED BY: PRW | PROJECT NO: 02032-09
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.

PETER R. WILLENBRING, PROFESSIONAL ENGINEER

DATE: 7/29/2015 LIC. NO: 15998

2015 MAIN STEM OF BASSETT CREEK RESTORATION PROJECT CITY OF GOLDEN VALLEY

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Minneapolis, MN 55416
www.wsbeng.com
763-541-4800 - Fax 763-541-1700
INFRASTRUCTURE ▯ ENGINEERING ▯ PLANNING ▯ CONSTRUCTION

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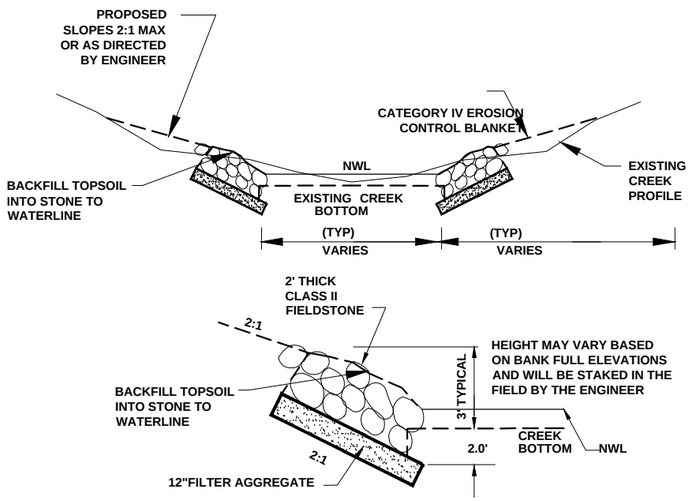
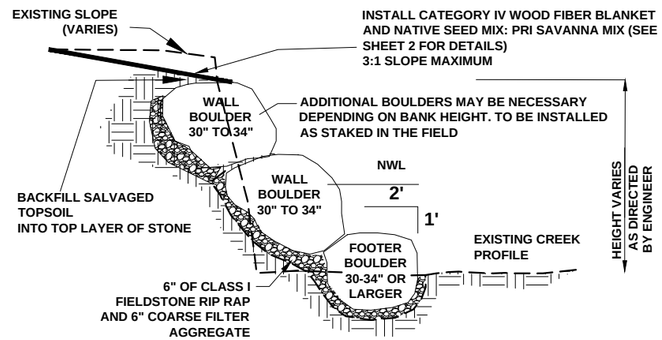
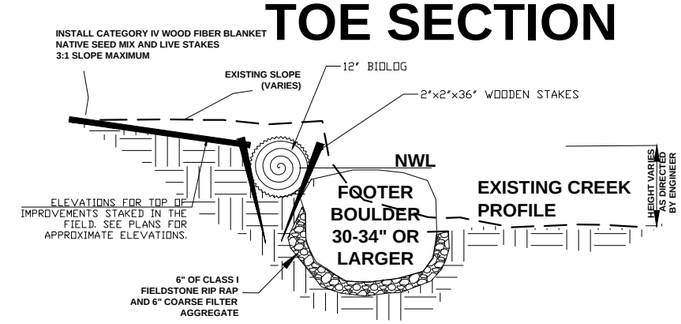
RIP RAP TOE STABILIZATION



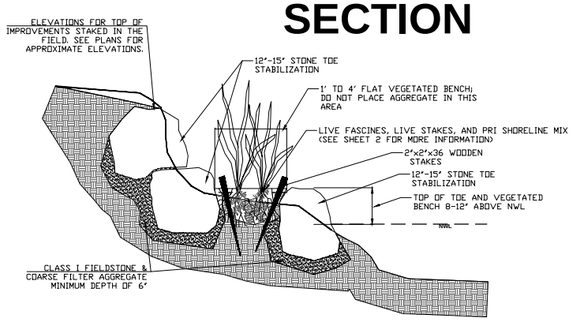
BOULDER WALL SECTION



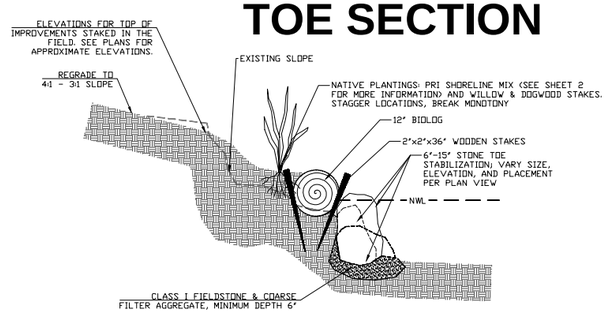
BIOLOG & BOULDER TOE SECTION



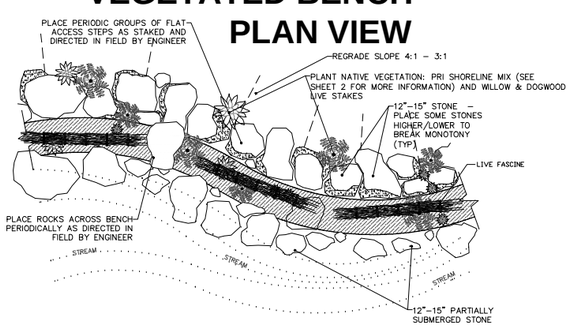
VEGETATED BENCH SECTION



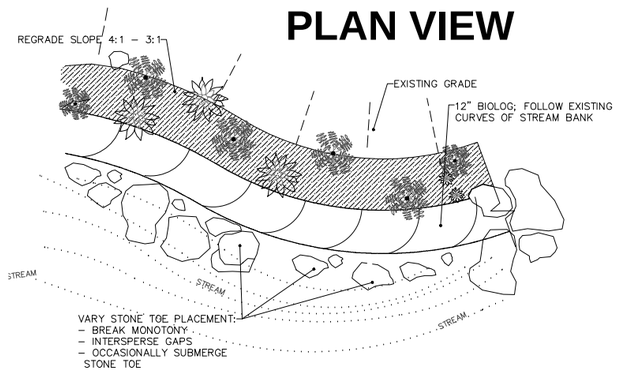
BIOLOG & STONE TOE SECTION



VEGETATED BENCH PLAN VIEW



BIOLOG & STONE TOE PLAN VIEW



CONSTRUCTION NOTES:

1. NO NET CUT/FILL ALLOWED WITHIN CHANNEL CROSS SECTION, EXISTING CHANNEL SECTION AREA MUST BE MAINTAINED. FILL VOLUMES RESULTING FROM BOULDERS, AGGREGATE, AND OTHER MATERIALS BROUGHT IN FOR STABILIZATION WILL BE OFFSET WITH AN EQUAL VOLUME OF COMMON EXCAVATION. SEE SPECIFICATIONS FOR MORE INFORMATION ON COMMON EXCAVATION. THE OVERALL EARTHWORK WILL LIKELY NOT BALANCE AND THAT IMPORTED ROCK AND OTHER MATERIAL WILL REQUIRE AN EQUAL AMOUNT OF EXCAVATION.

2. ALL IMPROVEMENTS SHALL FOLLOW THE MEANDERS AND CURVES OF THE EXISTING STREAMBANK AS INDICATED ON PLANS AND AS STAKED/DIRECTED IN THE FIELD. ALL PREEXISTING POOLS AND RIFFLES SHALL BE PROTECTED AND MAINTAINED.

3. EACH AREA (A THROUGH E) TO BE INSPECTED AND REVIEWED BY OWNER AND ENGINEER FOLLOWING CONSTRUCTION TO ENSURE PROPER INSTALLATION.

4. QUANTITIES FOR MATERIALS USED IN EACH CONSTRUCTION AREA WILL BE TABULATED AND AGREED UPON PRIOR TO BEGINNING CONSTRUCTION IN EACH AREA.

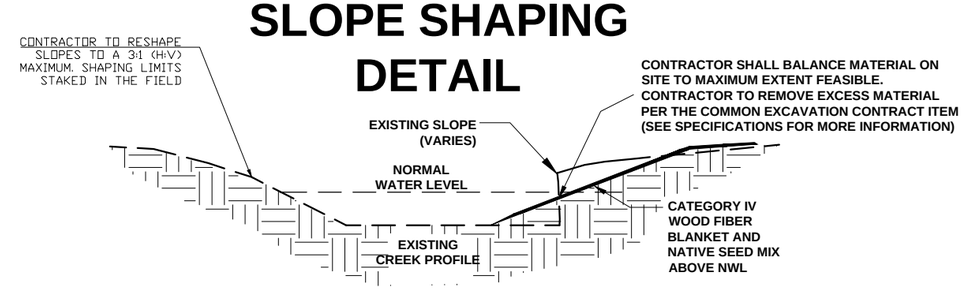
5. DUE TO UNCERTAINTY IN MATERIAL DELIVERY QUANTITIES AND WEIGHTS, A RANGE OF ACCEPTABLE QUANTITIES MAY BE AGREED UPON PRIOR TO CONSTRUCTION IN EACH AREA. CONTRACTOR MAY NOT INSTALL ANY QUANTITIES IN EXCESS OF PLANNED OR AGREED UPON NUMBERS WITHOUT FIRST CONSULTING THE ENGINEER.

6. FINAL HEIGHTS OF IMPROVEMENTS TO BE STAKED IN THE FIELD BY THE ENGINEER. SEE THE PLANS FOR APPROXIMATE ELEVATIONS FOR TOP OF IMPROVEMENTS.

APPROXIMATE ELEVATIONS

AREA	TOP OF BANK	NWL
A	882	878
B	881	867
C	868 - 870	864 - 867
D	865-866; 862 in sinuous, meandering area	858 - 863
E	860-862	856 - 858

SLOPE SHAPING DETAIL



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CITY OF GOLDEN VALLEY

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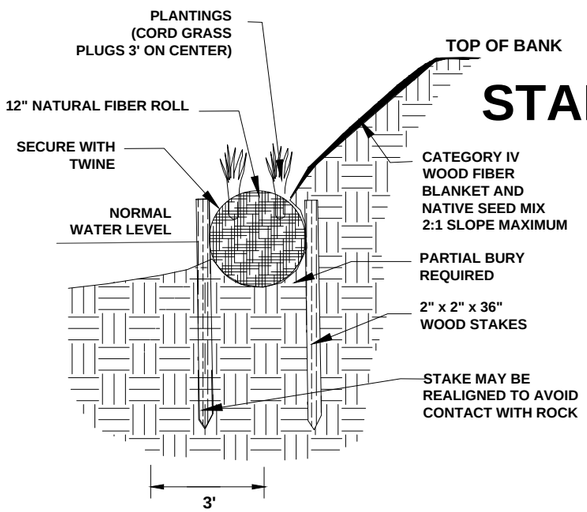
INFRASTRUCTURE ■ ENGINEERING ■ PLANNING ■ CONSTRUCTION

CITY PROJECT NUMBER 13-25
PROJECT NUMBER 02032-09

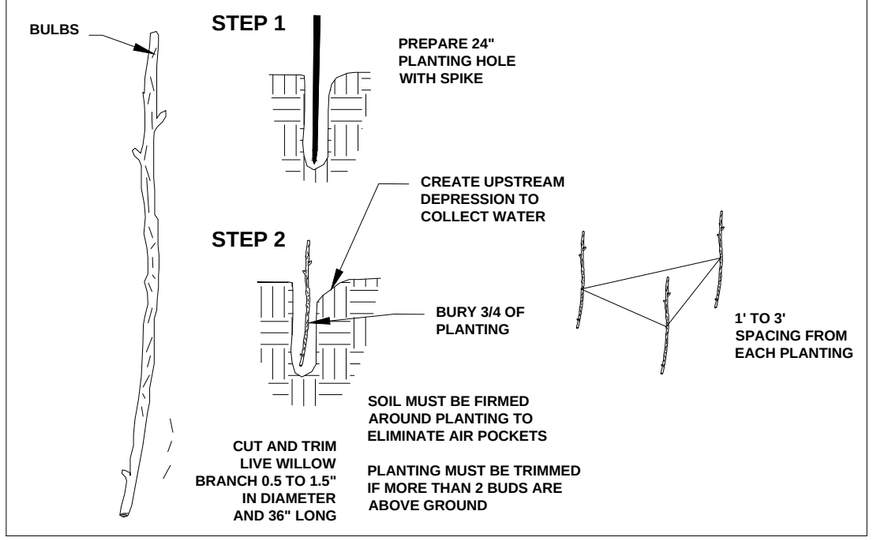
STREAMBANK STABILIZATION DETAILS

K:\02032-090\Cad\Proposed\02032-090 - Edgewood Storm.dwg

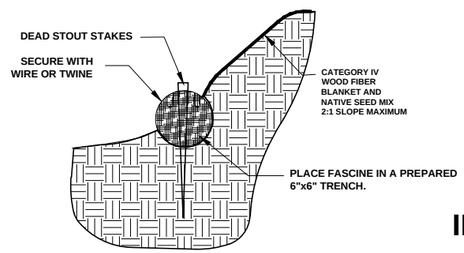
BIO-LOG STABILIZATION DETAIL

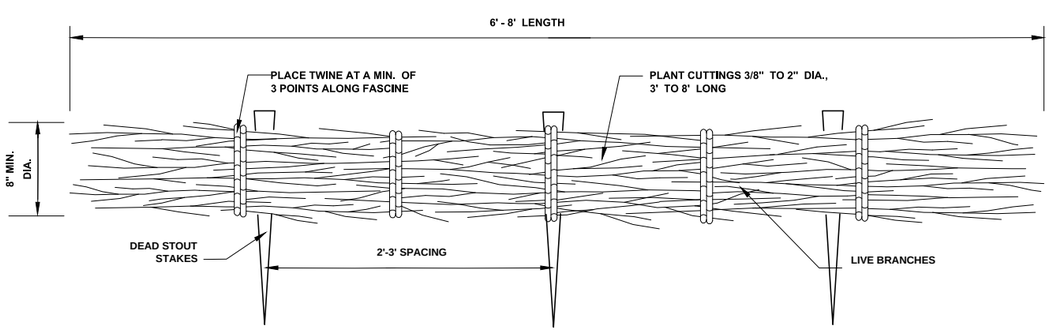


LIVE STAKE DETAIL

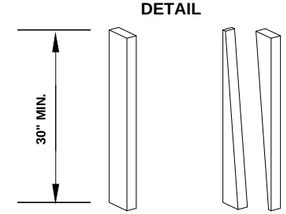


LIVE FASCINE INSTALLATION DETAIL





DEAD STAKE DETAIL



SAW A 2 x 4 DIAGONALLY TO
PRODUCE 2 DEAD STOUT STAKES

REVISION NO. DATE	EXPLANATION

SCALE: AS NOTED
PLAN BY: JHA
DESIGN BY: JHA
CHECKED BY: PRW
PROJECT NO: 02032-09
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.

PETER R. WILLENBRING, PROFESSIONAL ENGINEER

DATE: 7/29/2015 LIC. NO: 15998

2015 MAIN STEM OF BASSETT CREEK RESTORATION PROJECT
CITY OF GOLDEN VALLEY

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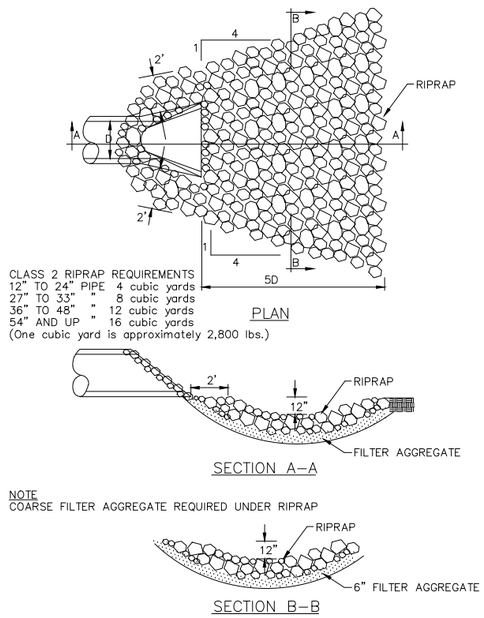
www.wsbeng.com
763-541-4800 - Fax 763-541-1700
INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

CITY PROJECT NUMBER 13-25
PROJECT NUMBER 02032-09 **STREAMBANK STABILIZATION DETAILS**

K:\02032-090\Cad\Proposed\02032-090 - Edgewood Storm.dwg

RIP RAP AT FES DETAIL



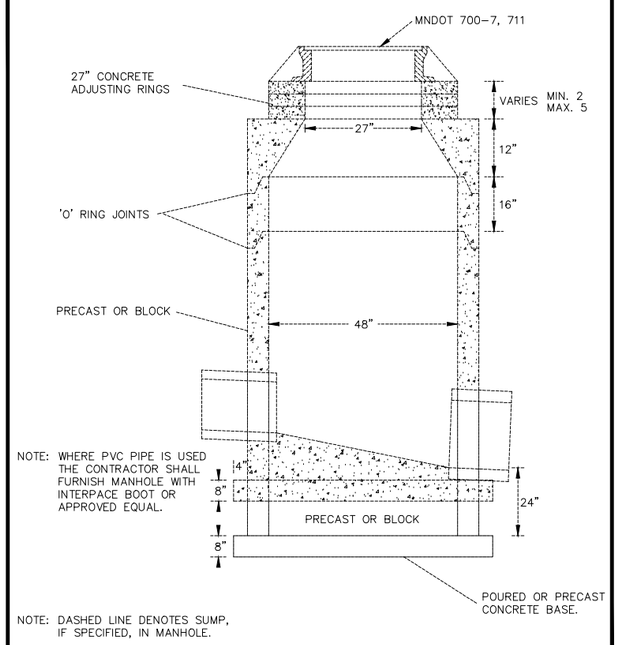
CLASS 2 RIPRAP REQUIREMENTS
12" TO 24" PIPE 4 cubic yards
27" TO 33" " 8 cubic yards
36" TO 48" " 12 cubic yards
54" AND UP " 16 cubic yards
(One cubic yard is approximately 2,800 lbs.)

NOTE
COARSE FILTER AGGREGATE REQUIRED UNDER RIPRAP

APPROVED MAY 1, 2001 CITY ENGINEER REG 23110	RIPRAP AT OUTLETS	Golden Valley

GV-EC-060

TYPICAL MANHOLE DETAIL



NOTE: WHERE PVC PIPE IS USED THE CONTRACTOR SHALL FURNISH MANHOLE WITH INTERPACE BOOT OR APPROVED EQUAL.

NOTE: DASHED LINE DENOTES SUMP, IF SPECIFIED, IN MANHOLE.

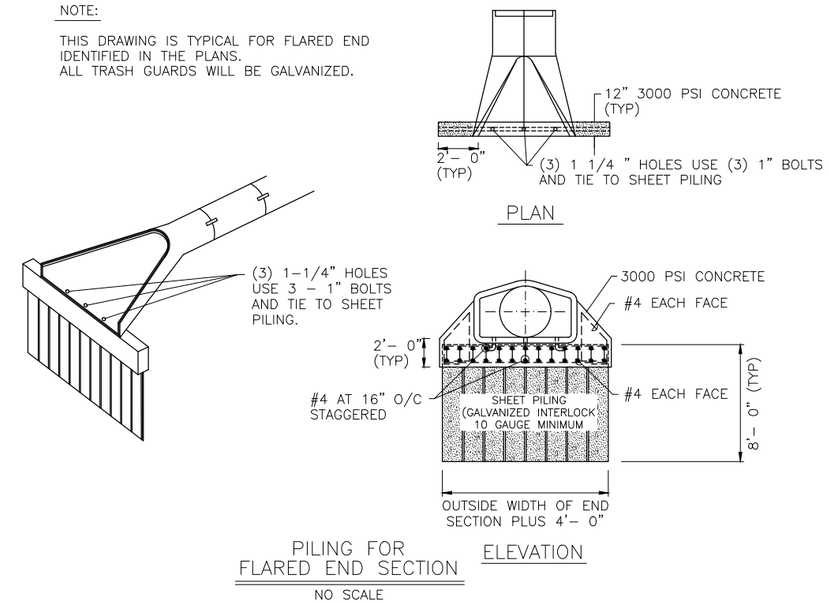
APPROVED MAY 1, 2001 CITY ENGINEER REG 23110	STORM SEWER MANHOLE	Golden Valley

GV-ST-010

FES SHEETPILING DETAIL

NOTE:

THIS DRAWING IS TYPICAL FOR FLARED END IDENTIFIED IN THE PLANS.
ALL TRASH GUARDS WILL BE GALVANIZED.



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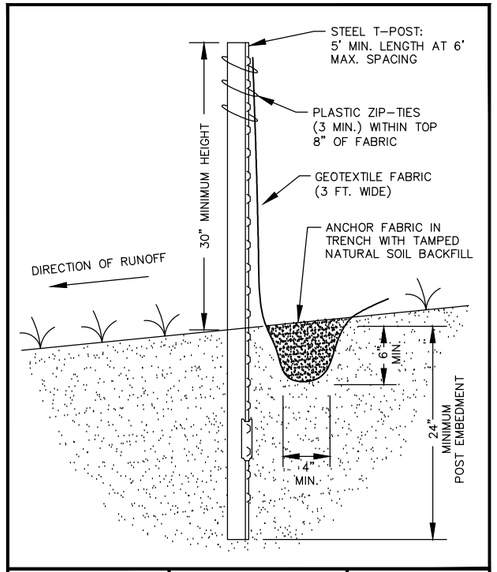


APPROVED FEBRUARY 1, 2007
CITY ENGINEER REG 23110

TYPICAL SILT FENCE INSTALLATION

Golden Valley
GV-EC-010

NOTES:

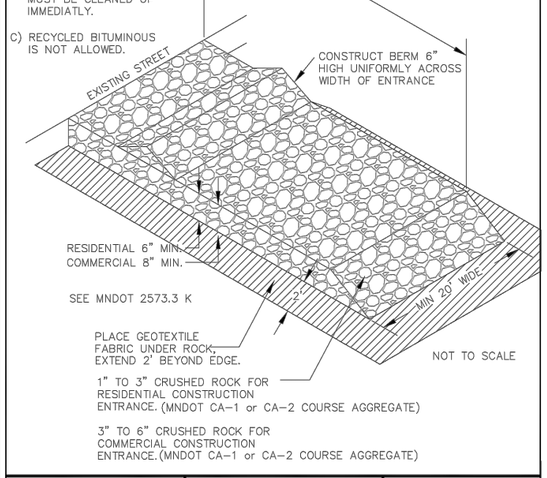
A) MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE MAY BE NECESSARY.

B) ANY MATERIAL WHICH STILL MAKES IT ONTO THE ROAD MUST BE CLEANED UP IMMEDIATLY.

C) RECYCLED BITUMINOUS IS NOT ALLOWED.

MINIMUM DIMENSIONS

RESIDENTIAL – 20' LONG X 20' WIDE BY 6" DEEP.
COMMERCIAL – 50' LONG X 20' WIDE BY 8" DEEP.

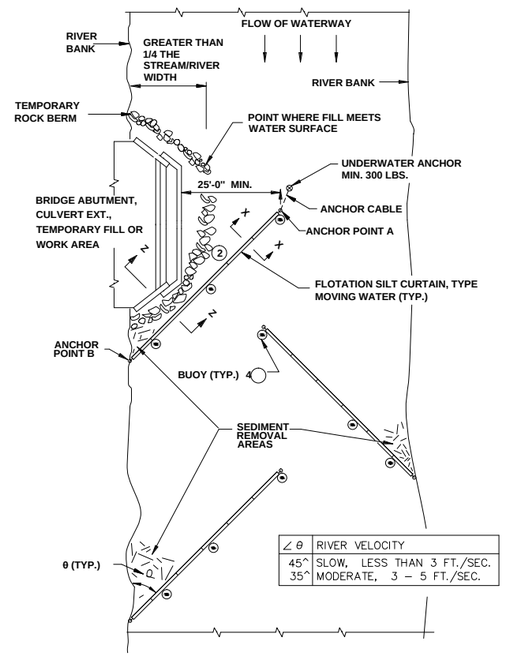


APPROVED DECEMBER 12, 2013
CITY ENGINEER REG 23110

ROCK CONSTRUCTION ENTRANCE

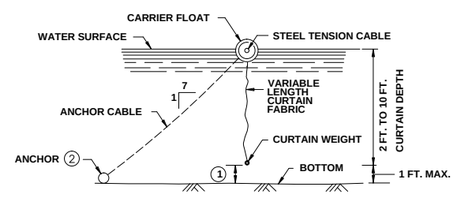
Golden Valley
GV-EC-070

FLOATING SILT CURTAIN DETAIL

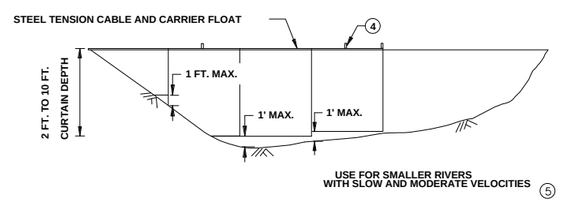


∠ θ	RIVER VELOCITY
45^	SLOW, LESS THAN 3 FT./SEC.
35^	MODERATE, 3 – 5 FT./SEC.

PLAN VIEW (TYPE: MOVING WATER)

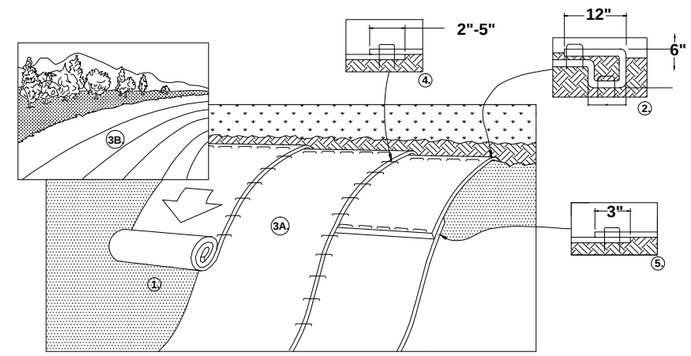


SECTION X-X



USE FOR SMALLER RIVERS WITH SLOW AND MODERATE VELOCITIES

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.

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CITY PROJECT NUMBER 13-25
PROJECT NUMBER 02032-09

EROSION AND SEDIMENT CONTROL DETAILS

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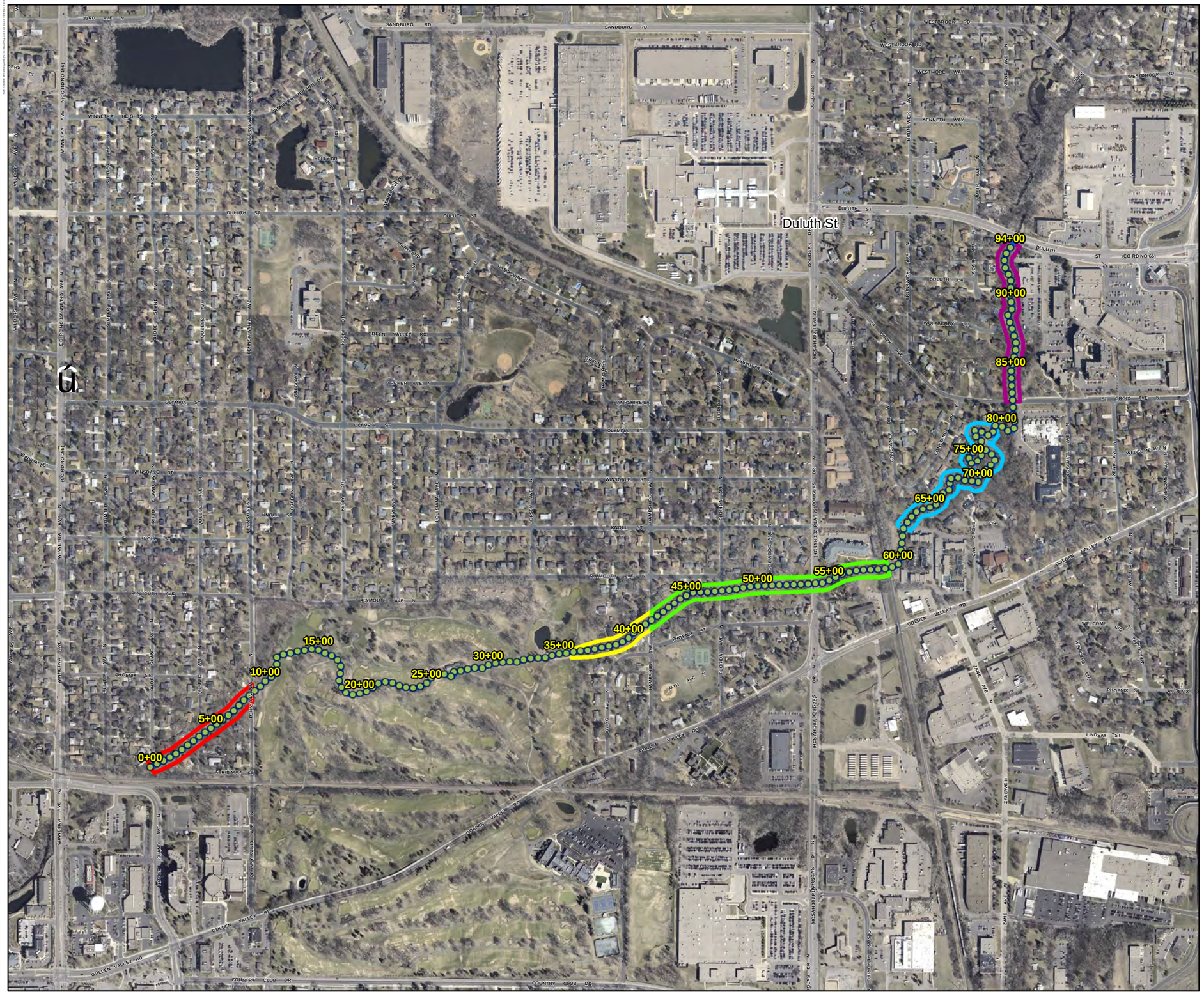

city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Improvement Locations

Legend

- Area A
- Area B
- Area C
- Area D
- Area E
- Creek Stationing

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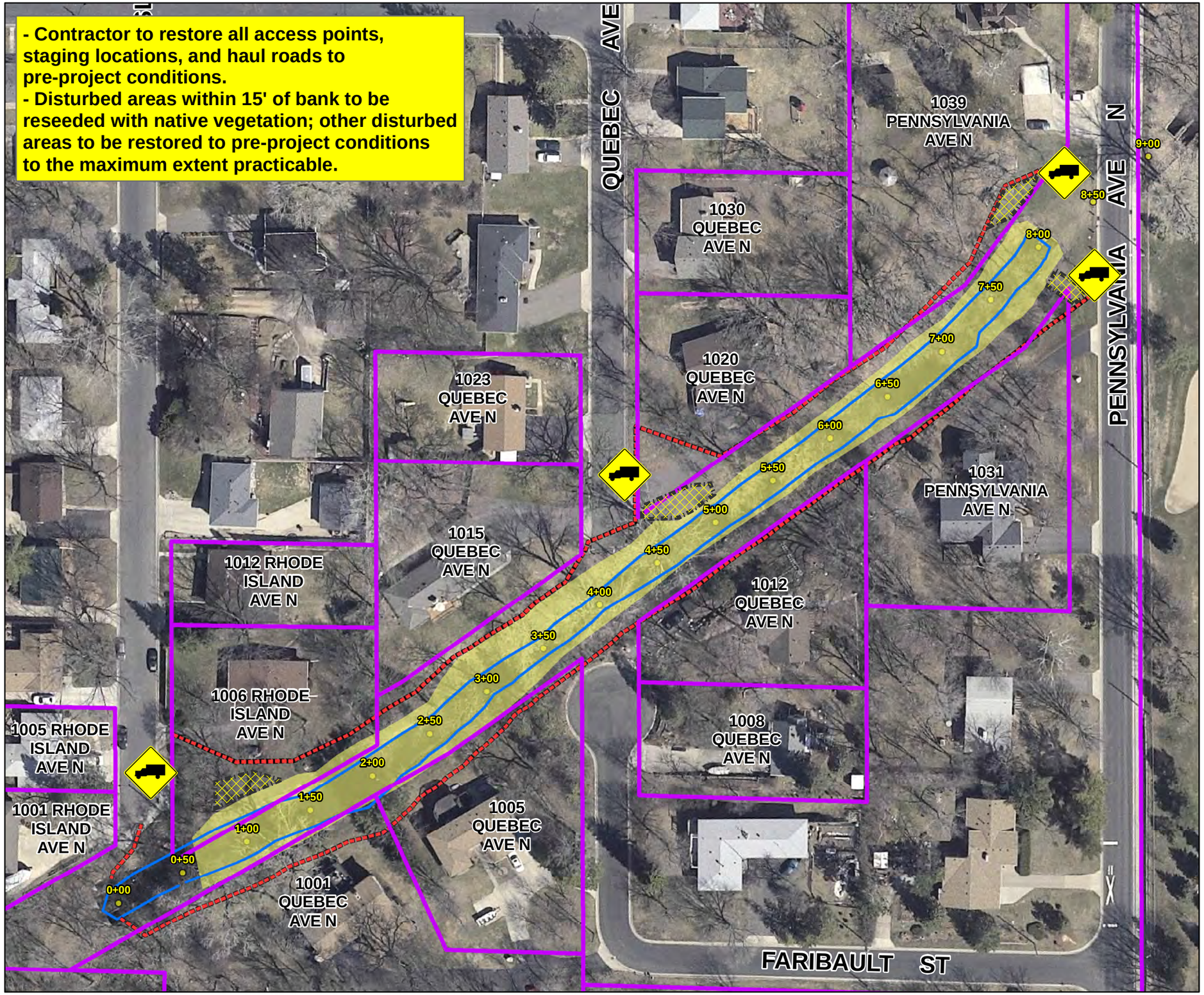
PETER R. WILLENBRING, P.E.

DATE: 7/29/2015 LICENSE NO: 15998

WSB & Associates, Inc.

N

0 250 500 1,000 Feet



city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Zone and Access
Area A

Legend

- Staging
- Parcels
- 20' Construction Zone and Access
- Creek Edge
- Proposed Grading Limits
- Creek Stationing
- Preferred Access

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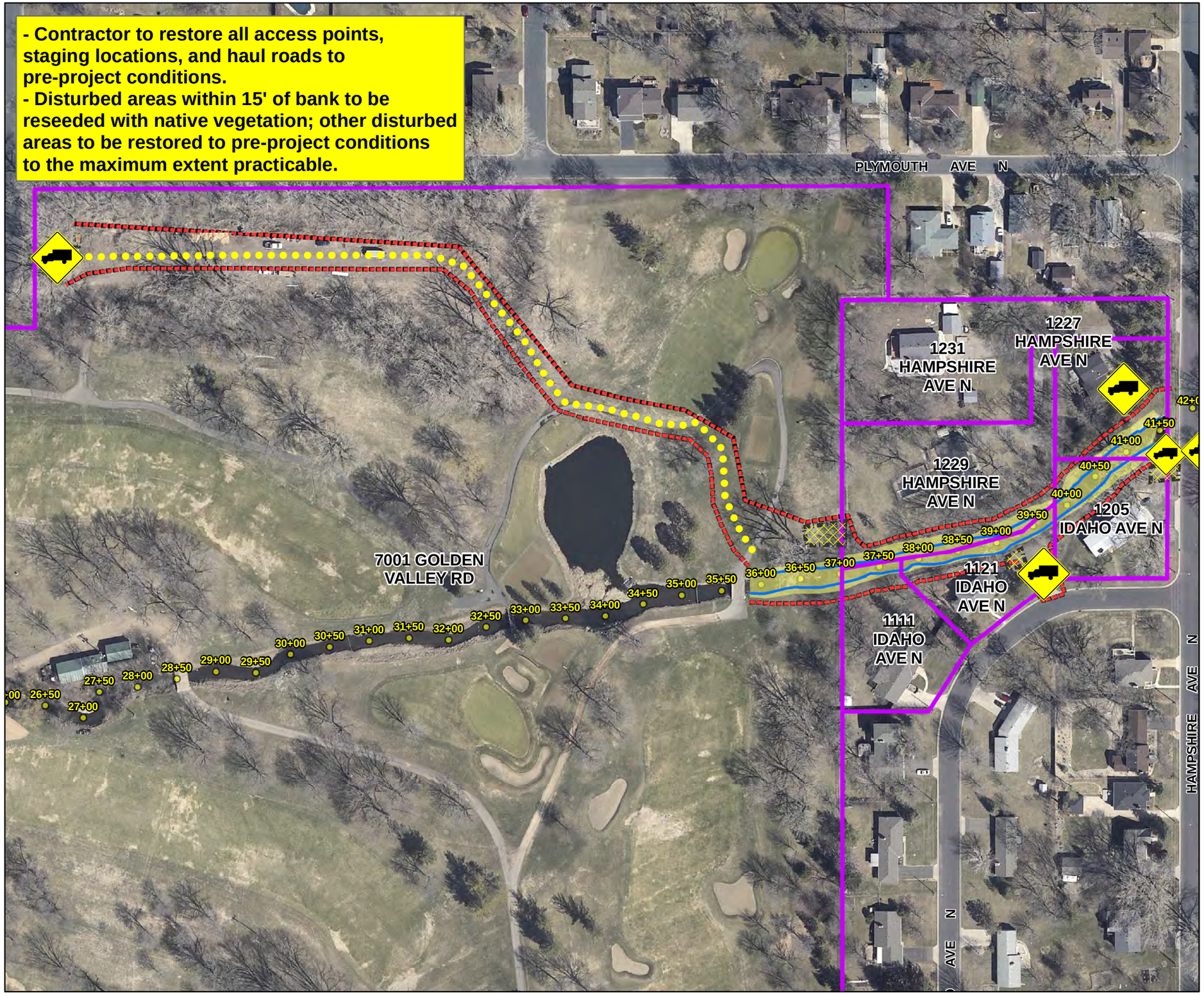
WSB & Associates, Inc.

N

0 25 50 100 Feet



city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Zone and Access
Area B

Legend

- Access Route
- Staging
- Parcels
- 20' Construction Zone and Access
- Creek Edge
- Proposed Grading Limits
- Creek Stationing
- Preferred Access

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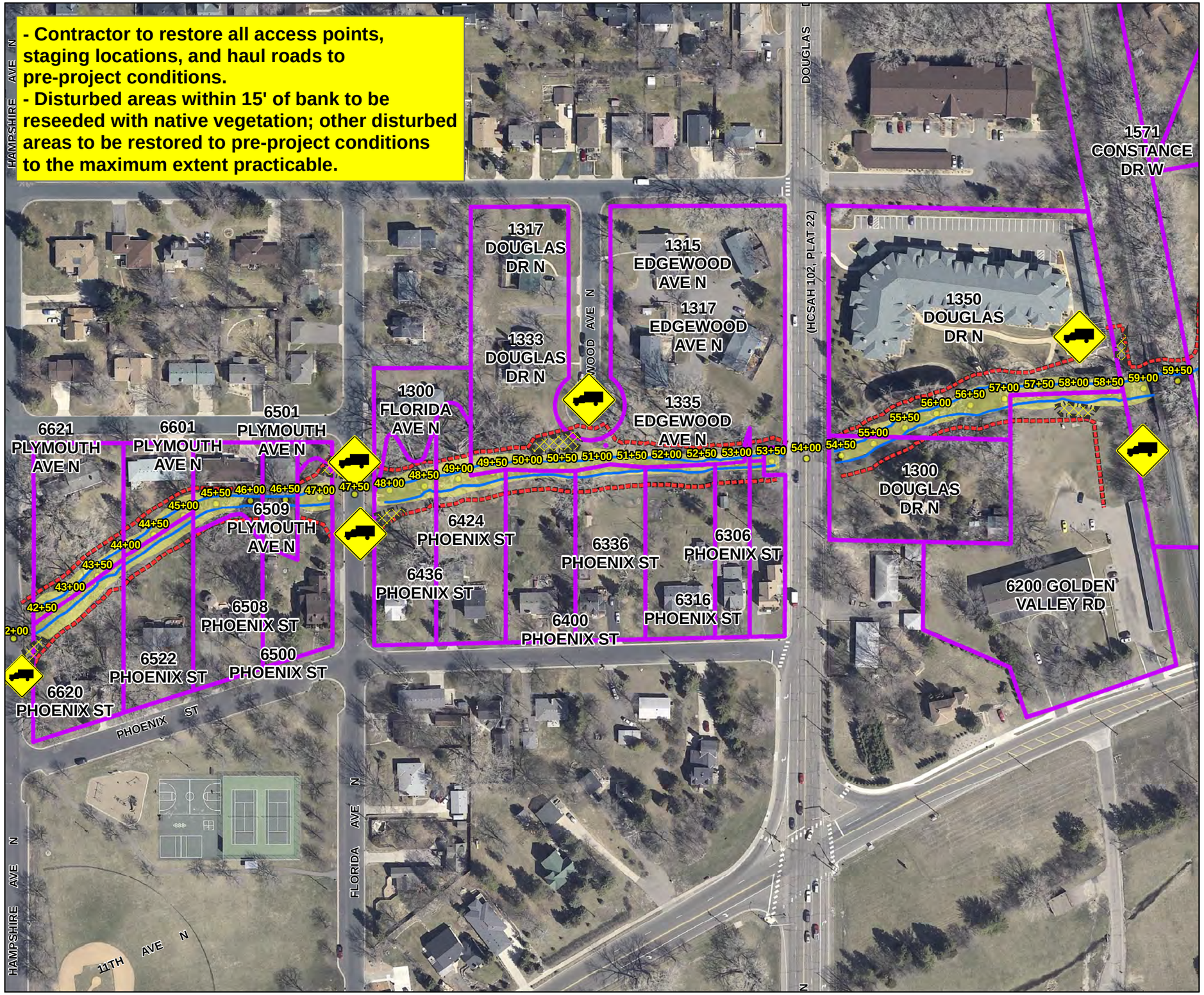
WSB & Associates, Inc.

N

Feet
0 25 50 100



2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Zone and Access
Area C

Legend

- Staging
- Parcels
- 20' Construction Zone and Access
- Creek Edge
- Proposed Grading Limits
- Creek Stationing
- Preferred Access

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N

Feet
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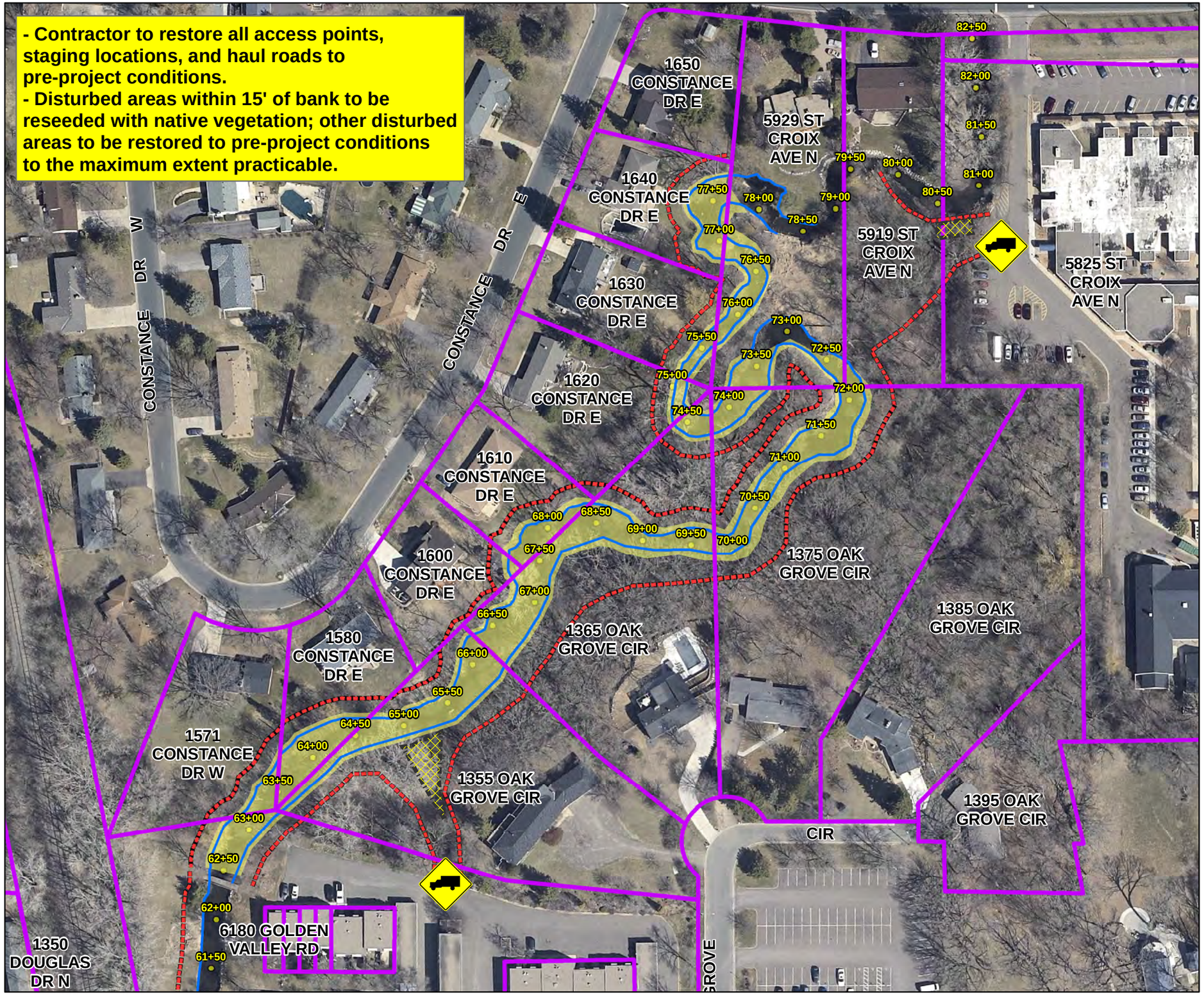

city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Zone and Access
Area D

Legend

- Staging
- Parcels
- 20' Construction Zone and Access
- Creek Edge
- Proposed Grading Limits
- Creek Stationing
- Preferred Access

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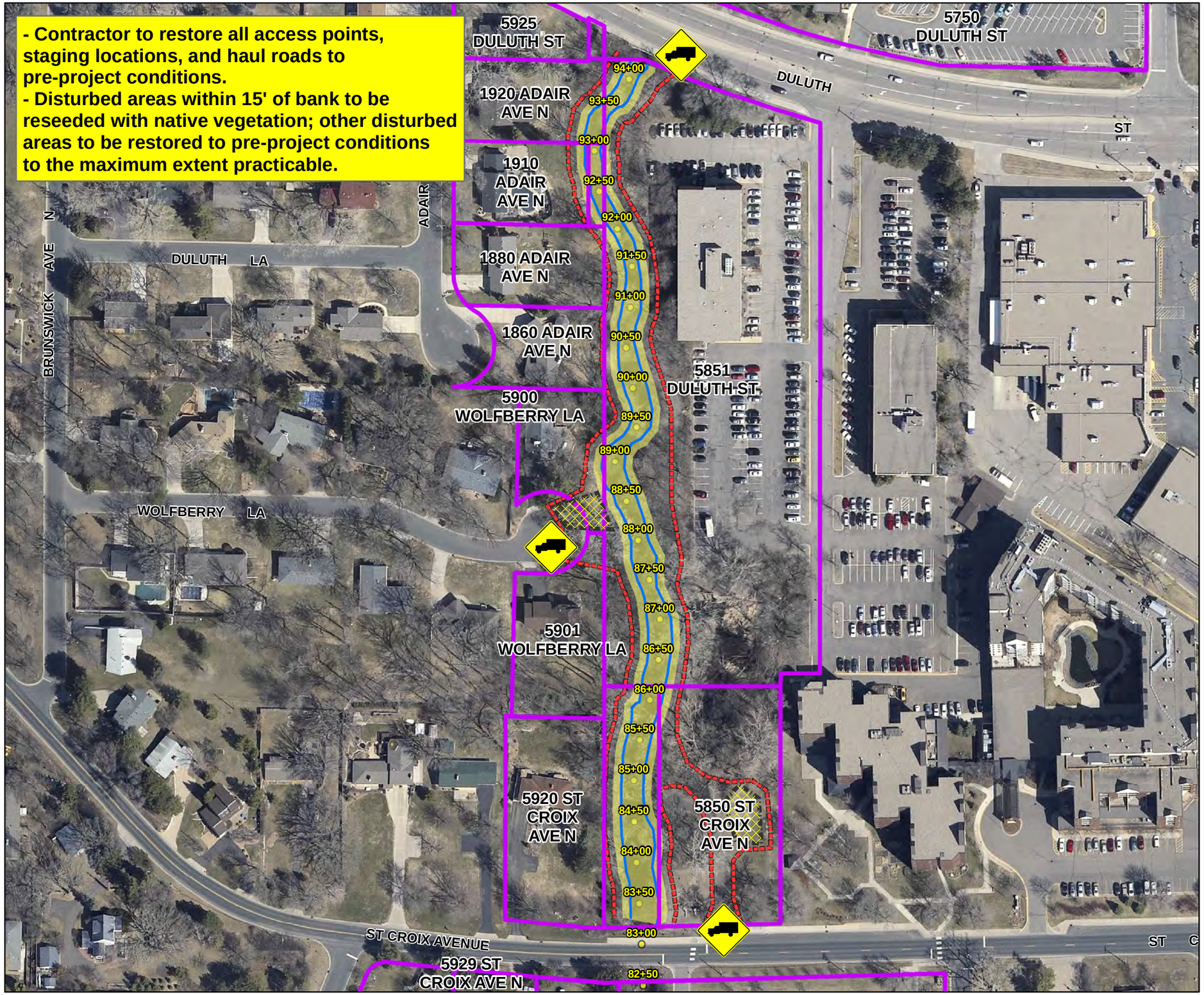
DATE: 7/29/2015 LICENSE NO: 15998

WSB & Associates, Inc.

N

0 25 50 100 Feet



city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Zone and Access
Area E

Legend

- Staging
- Parcels
- 20' Construction Zone and Access
- Creek Edge
- Proposed Grading Limits
- Creek Stationing
- Preferred Access

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N

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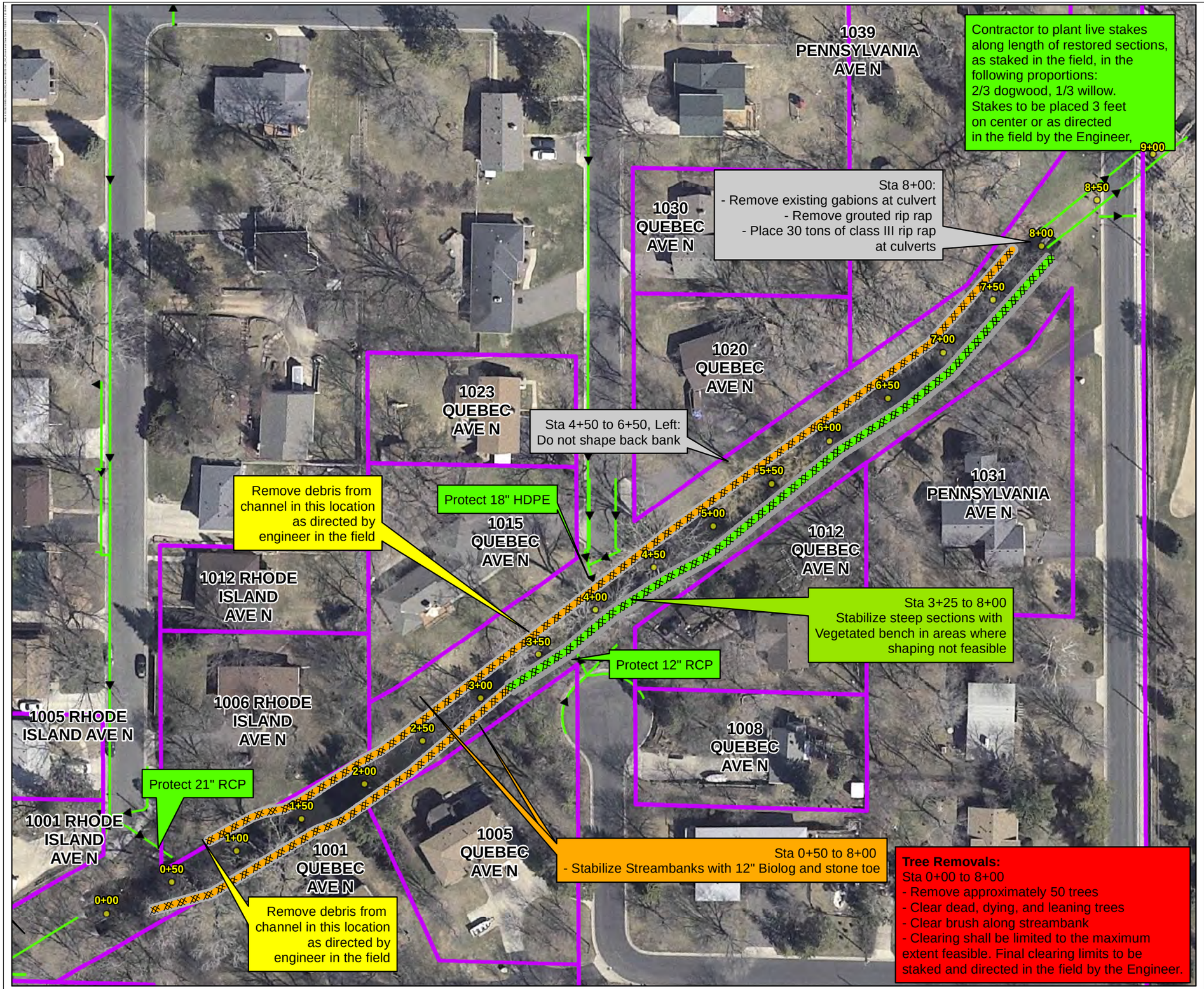

city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Plans
Area A

Legend

- Vegetated Bench
- Biolog with Stone Toe
- Parcels
- Creek Stationing
- Storm Sewer

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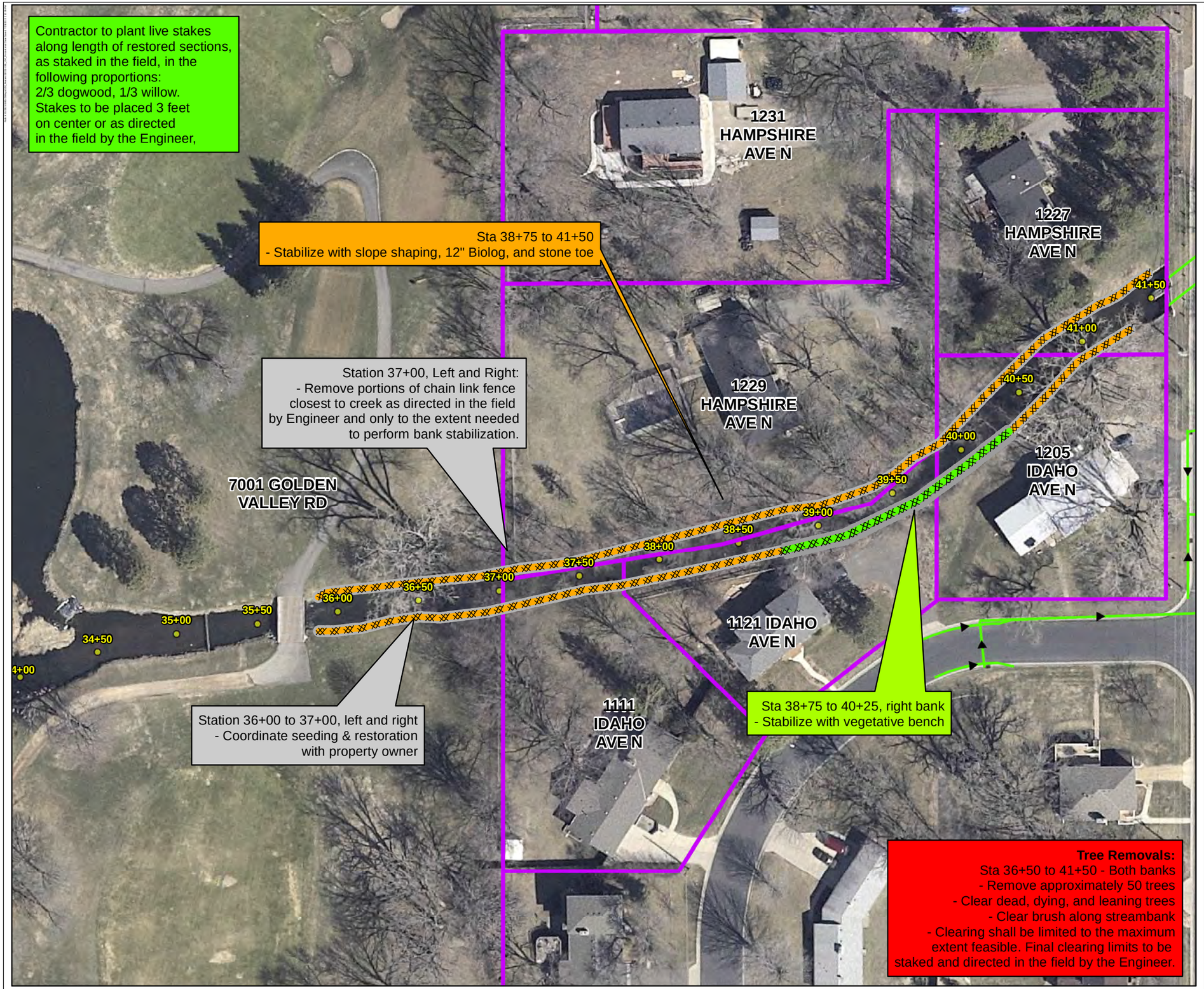
WSB & Associates, Inc.

N

0 15 30 60 Feet



city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Plans
Area B

Legend

- Vegetated Bench
- Biolog with Stone Toe
- Parcels
- Creek Stationing
- Storm Sewer

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N

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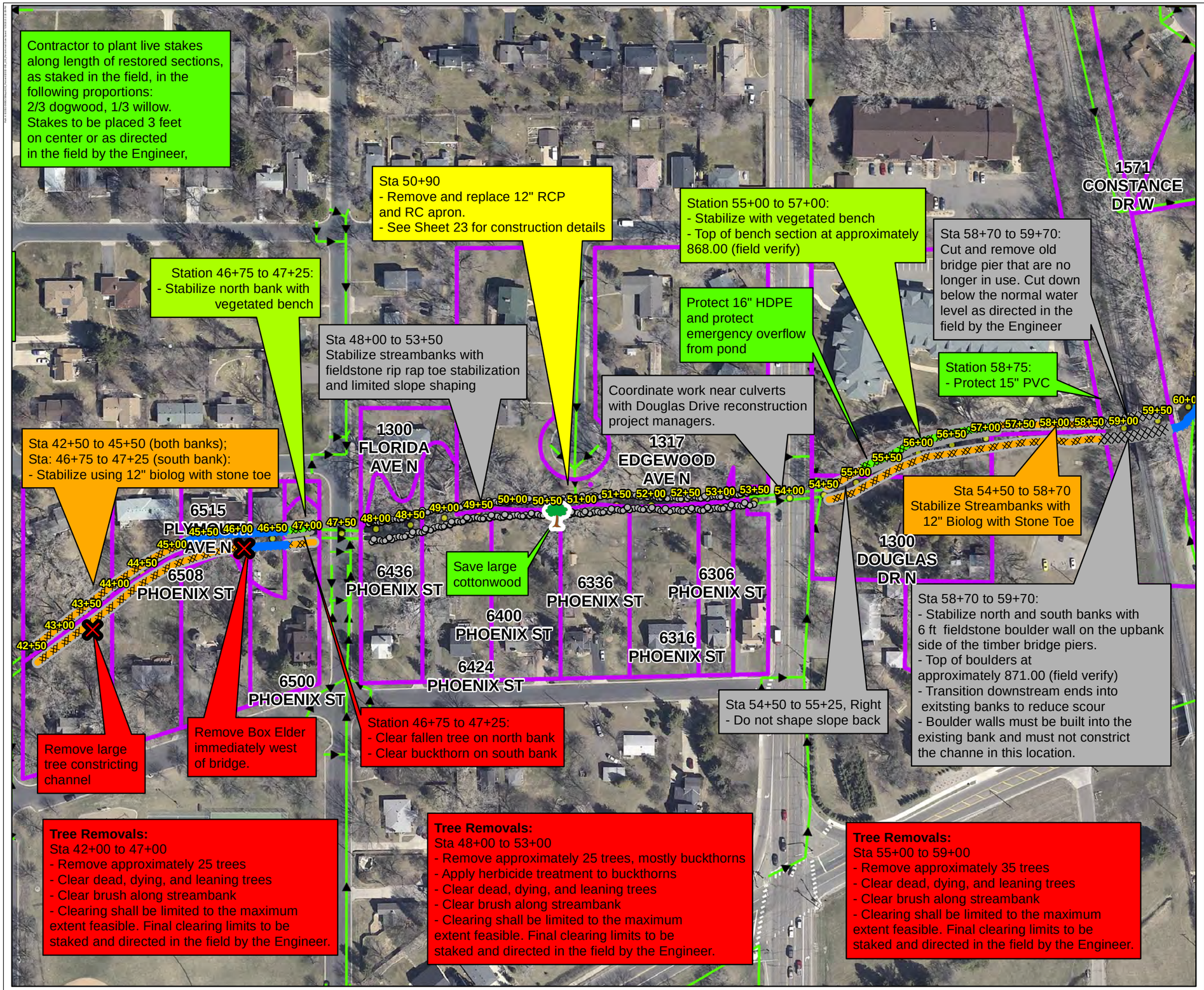

city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Plans
Area C

Legend

- Rip Rap Toe Stabilization
- Boulder Wall
- Previously Stabilized
- Vegetated Bench
- Biolog with Stone Toe
- Parcels
- Creek Stationing
- Storm Sewer

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WSB & Associates, Inc.

N

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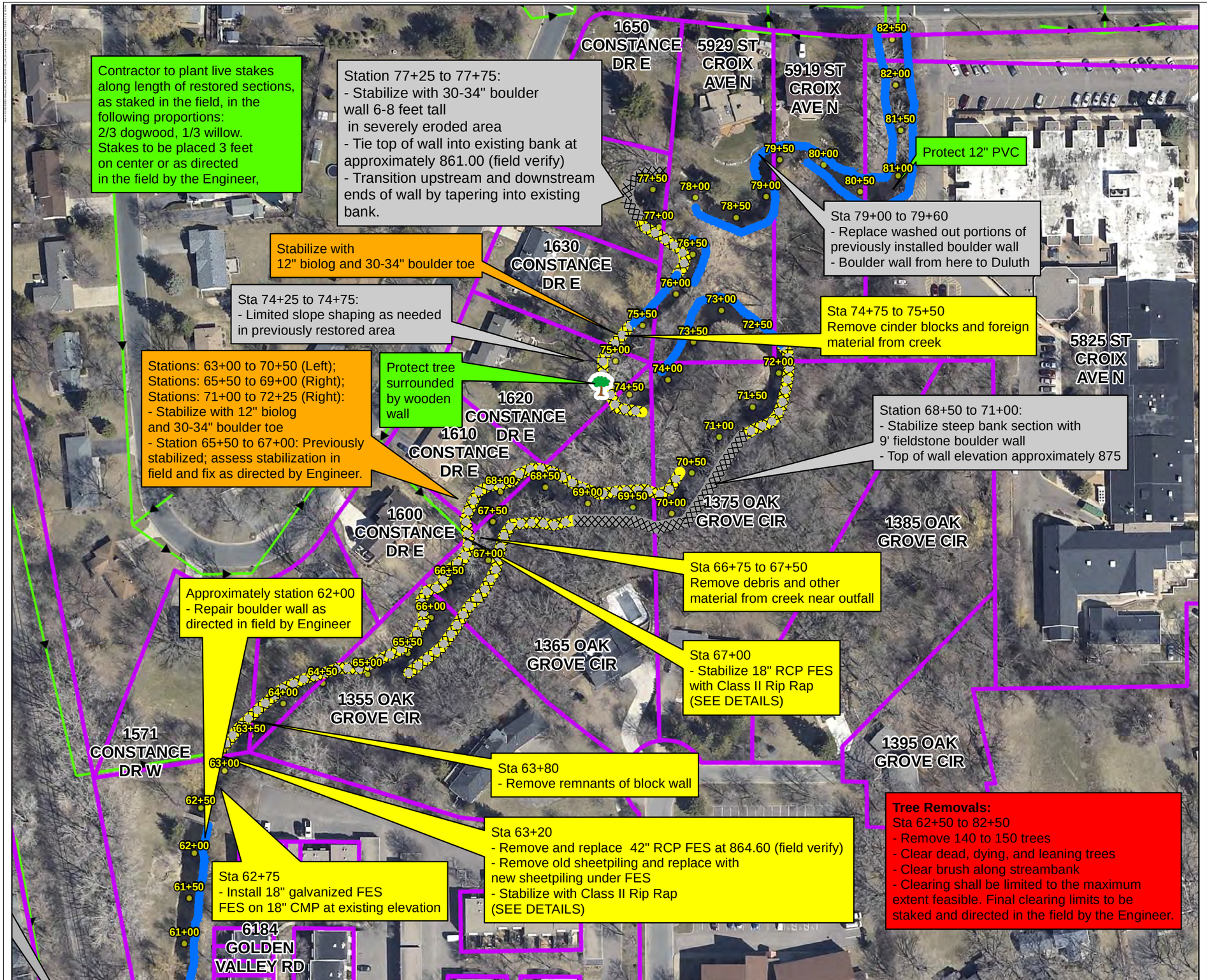

city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Plans
Area D

Legend

- Boulder Wall
- Previously Stabilized
- Biolog with Boulder Toe
- Parcels
- Creek Stationing
- Storm Sewer

NOTE: The predominant restoration practice in this reach is the biolog and boulder toe. Other stabilization practices will be considered within this reach -- as topography and other conditions allow -- as directed in the field by the Engineer.

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WSB & Associates, Inc.

N

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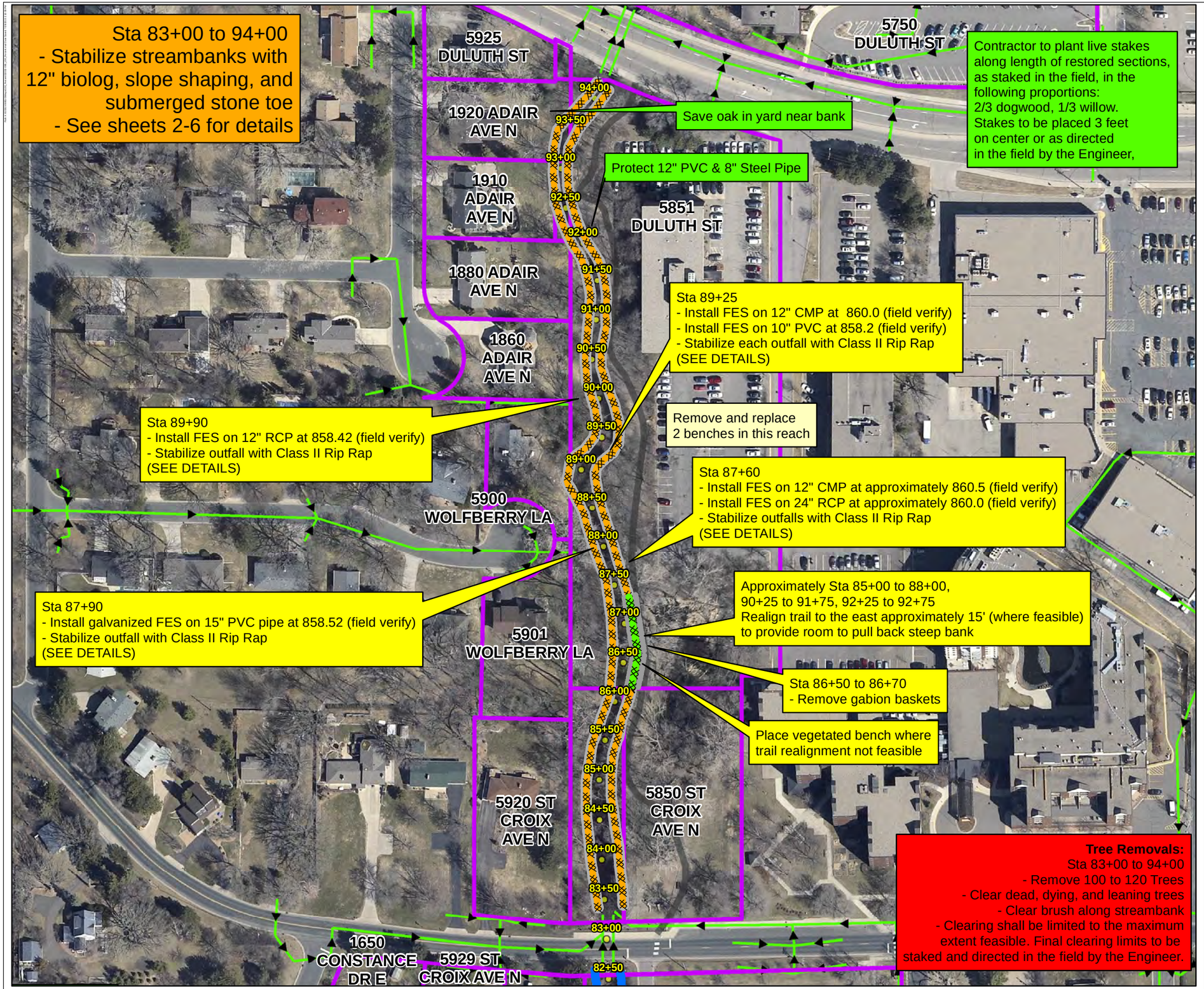

city of golden valley

Bassett Creek Watershed Management Commission

2015 Bassett Creek Main Stem Restoration Project
City of Golden Valley
Minnesota

Construction Plans
Area E

Legend

- Previously Stabilized
- Vegetated Bench
- Biolog with Stone Toe
- Parcels
- Creek Stationing
- Paved Trail
- Storm Sewer

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N

0 35 70 140 Feet