ADDENDUM No. 5

Date **January 3, 2014**

City of Austin

Project Name **J. J. Seabrook Stream Restoration, Rain Garden and Urban Trail Project**

C.I.P. No. **5282.055**

This Addendum forms a part of Contract and clarifies, corrects or modifies original Bid Documents, dated **October 7, 2013**. Acknowledge receipt of this addendum in space provided on bid form. Failure to do so may subject bidder to disqualification.

A. Project Manual Revisions:

Reference Section **COVER SHEET**

i. Delete **COVER SHEET** in its entirety and replace with the attached revised

COVER SHEET

Reference Section **COMPETITIVE SEALED PROPOSAL TABLE OF CONTENTS**

i. Delete **COMPETITIVE SEALED PROPOSAL TABLE OF CONTENTS** in its entirety and replace with the attached revised

COMPETITIVE SEALED PROPOSAL TABLE OF CONTENTS

Reference Section **00300UCSP UNIT PRICE PROPOSAL FORM**

i. Delete **00300UCSP UNIT PRICE PROPOSAL FORM** in its entirety and replace with the attached revised

00300UCSP UNIT PRICE PROPOSAL FORM

Reference Section **00810 SUPPLEMENTAL GENERAL CONDITIONS**

i. Delete **00810 SUPPLEMENTAL GENERAL CONDITIONS** in its entirety and replace with the attached revised

00810 SUPPLEMENTAL GENERAL CONDITIONS

Reference Section **00830 WAGE RATES AND PAYROLL REPORTING – HEAVY AND HIGHWAY**

i. Delete **00830 WAGE RATES AND PAYROLL REPORTING – HEAVY AND HIGHWAY** in its entirety and replace with the attached revised

00830 WAGE RATES AND PAYROLL REPORTING – HEAVY AND HIGHWAY

Reference Section **01010 SUMMARY OF WORK**

i. Delete **01010 SUMMARY OF WORK** in its entirety and replace with the attached revised

01010 SUMMARY OF WORK

Reference Section **01020 ALLOWANCES**

i. Add the attached

01020 ALLOWANCES

Reference Section **SP104S REMOVING PORTLAND CEMENT CONCRETE**

i. Add the attached

SP104S REMOVING PORTLAND CEMENT CONCRETE

Reference Section **SP315S MILLING ASPHALTIC CONCRETE PAVEMENT AND NON-PORTLAND CEMENT BASES.**

i. Add the attached

SP315S MILLING ASPHALTIC CONCRETE PAVEMENT AND NON-PORTLAND CEMENT BASES.

Reference Section **SP591 RIPRAP FOR SLOPE PROTECTION**

i. Delete **SP591 RIPRAP FOR SLOPE PROTECTION** in its entirety and replace with the attached revised

SP591 RIPRAP FOR SLOPE PROTECTION

Reference Section **SP601S SALVAGING AND PLACING TOPSOIL**

i. Delete **SP601S SALVAGING AND PLACING TOPSOIL** in its entirety and replace with the attached revised

SP601S SALVAGING AND PLACING TOPSOIL

Reference Section **SP602S SODDING FOR EROSION CONTROL**

i. Delete **SP602S SODDING FOR EROSION CONTROL** in its entirety and replace with the attached revised

SP602S SODDING FOR EROSION CONTROL

Reference Section **SP604S SEEDING FOR EROSION CONTROL**

i. Delete **SP604S SEEDING FOR EROSION CONTROL** in its entirety and replace with the attached revised

SP SP604S SEEDING FOR EROSION CONTROL

Reference Section **SP605S SOIL RETENTION BLANKET**

i. Delete **SP605S SOIL RETENTION BLANKET** in its entirety and replace with the attached revised

SP605S SOIL RETENTION BLANKET

Reference Section **SP608S PLANTING**

i. Delete **SP608S PLANTING** in its entirety and replace with the attached revised

SP608S PLANTING

Reference Section **SP609S NATIVE GRASSLAND SEEDING**

i. Delete **SP609S NATIVE GRASSLAND SEEDING** in its entirety and replace with the attached revised

SP609S NATIVE GRASSLAND SEEDING

Reference Section **SP610S PRESERVATION OF TREES**

i. Delete **SP610S PRESERVATION OF TREES** in its entirety and replace with the attached revised

SP610S PRESERVATION OF TREES

Reference Section **SP640S MORTARED ROCK WALL**

i. Delete **SP640S MORTARED ROCK WALL** in its entirety and replace with the attached revised

SP640S MORTARED ROCK WALL

Reference Section **SP1301S GRANITE GRAVEL HIKE AND BIKE TRAIL**

i. Delete **SP1301S GRANITE GRAVEL HIKE AND BIKE TRAIL** in its entirety and replace with the attached revised

SP1301S GRANITE GRAVEL HIKE AND BIKE TRAIL

Reference Section **SS603 IRRIGATION**

i. Delete **SS603 IRRIGATION** in its entirety and replace with the attached revised

SS603 IRRIGATION

Reference Section **SS611 EXTENDED LANDSCAPE MAINTENANCE**

i. Delete **SS611 EXTENDED LANDSCAPE MAINTENANCE** in its entirety and replace with the attached revised

SS611 EXTENDED LANDSCAPE MAINTENANCE

Reference Section **SS612 TOPSOIL MIX**

i. Delete **SS612 TOPSOIL MIX** in its entirety and replace with the attached revised

SS612 TOPSOIL MIX

Reference Section **SS661 LOG HABITAT STRUCTURES**

i. Delete **SS661 LOG HABITAT STRUCTURES** in its entirety and replace with the attached revised

SS661 LOG HABITAT STRUCTURES

Reference Section **SS696 TEMPORARY ACCESS ROUTES AND RAMPS**

i. Delete **SS696 TEMPORARY ACCESS ROUTES AND RAMPS** in its entirety and replace with the attached revised

SS696 TEMPORARY ACCESS ROUTES AND RAMPS

B. Drawing Revisions:

i. Delete **Sheet 1, Sheet 29 and Sheet 31** in their entirety and replace with the attached revised **Sheet 1, Sheet 29 and Sheet 31.**

This addendum consists of 146 page(s)/sheet(s).

for Christina Calvery

Approved by OWNER

1/3/2014

Approved by ENGINEER/ARCHITECT

END

CITY OF AUSTIN

PROJECT MANUAL
Contract Documents

COMPETITIVE SEALED PROPOSAL

VOLUME 1 of 2

J. J. Seabrook Stream Restoration, Rain Garden and Urban Trail Project

C.I.P. PROJECT NUMBER: 5282.055
RFP 6100 CLMB316

CITY OF AUSTIN
PO Box 1088
Austin, TX 78767

Managing Department – Public Works
Sponsor Department – Watershed Protection

October 7, 2013

ADDENDUM 5

COMPETITIVE SEALED PROPOSAL
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01500	08/09/12	Temporary Facilities
01505	04/22/13	Construction and Demolition Waste Management
01550	08/09/12	Public Safety and Convenience
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111S	Excavation	9/26/2012
120S	Channel Excavation	9/26/2012
130S	Borrow	9/26/2012
132S	Embankment	8/20/2007
201S	Subgrade Preparation	8/20/2007
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411S	Surface Finishes for Concrete	11/13/2007
420S	Drilled Shaft Foundations	9/26/2012
430S	P.C. Concrete Curb and Gutter	11/15/2011
432S	P.C. Concrete Sidewalks	1/4/2010
433S	P.C. Concrete Driveways	12/9/2008
436S	P.C. Concrete Valley Gutters	11/13/2007
480S	Concrete Paving Units for Sidewalks	4/4/2012
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509S	Excavation Safety Systems	9/26/2012
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591S	Riprap for Slope Protection	9/26/2012
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604S	Seeding for Erosion Control	8/18/2010
605S	Soil Retention Blanket	6/21/2007
606S	Fertilizer	6/21/2007
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609S	Native Grasslands Seeding and Planting for Erosion Control	8/18/2010

610S	Preservation of Trees and Other Vegetation	9/26/2012
628S	Sediment Containment Dike	10/30/2009
639S	Rock Berm	8/18/2010
640S	Mortared Rock Wall	2/24/2010
641S	Stabilized Construction Entrance	6/21/2007
642S	Silt Fence	9/1/2011
648S	Mulch Sock	8/18/2010
700S	Mobilization	9/26/2012
701S	Fencing	9/26/2012
802S	Project Signs	9/26/2012
803S	Barricades, Signs and Traffic Handling	11/15/2011
871S	Reflectorized Pavement Markings	6/21/2007
873S	Raised Pavement Markings	2/24/2010
1301S	Granite Gravel Hike and Bike Trail	8/16/2004

Special Provisions to City Standard Technical Specifications

SP104S	Removing Portland Cement Concrete
SP315S	Milling Hot Mix Asphaltic Concrete Pavement and Non-Portland Cement Concrete Bases
SP-403S	Concrete for Structures
SP-510S	Pipe
SP-591S	Riprap for Slope Protection
SP-601S	Salvaging and Placing Topsoil
SP-602S	Sodding for Erosion Control
SP-604S	Seeding for Erosion Control
SP-605S	Soil Retention Blanket
SP-606S	Fertilizer
SP-608S	Planting
SP-609S	Native Grassland Seeding and Planting for Erosion Control
SP-610S	Preservation of Trees
SP-640S	Mortared Rock Wall
SP-1301S	Granite Gravel Hike and Bike Trail

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SS-611	Extended Landscape Maintenance
SS-612	Topsoil Mix
SS-661	Log Habitat Features
SS-696	Access Ramps
SS-698	Cofferdam and Dewatering
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SS-4466	Prefabricated Bridge

VOL. 2 10/09/00 **MBE/WBE Procurement Program Package**

END

UNIT PRICE PROPOSAL
Section 00300U CSP

In compliance with applicable City of Austin Policy and Texas Government Code 2267 and in response to Request for Proposal No. CLMB316, the undersigned offers the proposal for the following Project for the City of Austin, Texas:

Project:	J. J. Seabrook Stream Restoration, Rain Garden and Urban Trail Project
CIP ID#:	5282.055

Having examined the Project Manual, Drawings and Addenda, the site of the proposed Work and being familiar with all of the conditions surrounding construction of the proposed Project, having conducted all inquiries, tests and investigations deemed necessary and proper; hereby proposes to furnish all labor, permits, material, machinery, tools, supplies and equipment, and incidentals, and to perform all Work required for construction of the Project in accordance with the Project Manual, Drawings and Addenda within the time indicated for the following prices of:

Note: The Offeror will enter the line item subtotal in the "Amount" column below, which is the product of the estimated "Quantity" multiplied by the "Unit Price". Any mathematical errors will be corrected for the purpose of determining the correct Amount to be entered in the Proposal Form. The Amounts, including any corrected Amounts, will then be totaled to determine the actual amount of the Proposal.

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
			Stream Channel Improvements		
104S-B	230	SF	Remove Portland Cement Concrete Slab	$_____	$_____
120S-B:	1732	CY	Channel Excavation, Plan Quantity (Main Reach and Storm Drain Retrofits)	$_____	$_____
132S-A:	394	CY	Embankment	$_____	$_____
509S-1:	100	LF	Trench Excavation Safety Protective Systems, (all depths)	$_____	$_____
510-ASD, 15" Dia.	5	LF	Pipe, 15" Dia. RCP, including excavation and backfill, for Storm Sewer Pipe C Retrofit	$_____	$_____
510-CSD-A	7	LF	Pipe Excavation, 42" Width, Removing Existing Storm Sewer Pipe A	$_____	$_____
510-CSD-B	8	LF	Pipe Excavation, 42" Width, Removing Existing Storm Sewer Pipe B	$_____	$_____
510-CSD-C	15	LF	Pipe Excavation, 27" width, Removing Existing Storm Sewer Pipe C	$_____	$_____
510-DSD-C	15	LF	Pipe Trench Backfill, 27" width, Existing Storm Sewer Pipe C	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
605S-A-1:	3787	SY	Soil Retention Blanket Class 2; Type F, Jute netting/coir fiber - Channel & Riparian Restoration Area	$_____	$_____
605S-A-2:	99	SY	Soil Retention Blanket Class 2; Type F - Woven coir fiber - Storm Sewer Retrofit C Swale Area	$_____	$_____
610S-A	1936	LF	Protective Fence Type A Chain Link Fence (Typical Application-High Damage Potential)	$_____	$_____
610S-B	18	LF	Protective Fence Type B Wood Fence (Typical Application-High Damage Potential)	$_____	$_____
639S	35	LF	Rock Berm	$_____	$_____
642S	300	LF	Silt Fence for Erosion Control		
648S	176	LF	Mulch Sock (12 Inches)	$_____	$_____
SP-591S-B-1	20.3	CY	Dry Rock Riprap, Class I, Riffle I	$_____	$_____
SP-591S-B-2	15.9	CY	Dry Rock Riprap, Class I, Riffle II	$_____	$_____
SP-591S-B-3	15.3	CY	Dry Rock Riprap, Class I, Riffle III With Boulder Crossing	$_____	$_____
SP-591S-B-4	21.6	CY	Dry Rock Riprap, Class I, Riffle IV	$_____	$_____
SP-591S-B-5	38.8	CY	Dry Rock Riprap, Class I, Riffle V	$_____	$_____
SP-591S-B-6	15.0	CY	Dry Rock Riprap, Class I, Riffle VI	$_____	$_____
SP-591S-B-7	18.9	CY	Dry Rock Riprap, Class I, Riffle VII	$_____	$_____
SP-591S-B-8	41.4	CY	Dry Rock Riprap, Class I, Riffle VIII With Boulder Crossing	$_____	$_____
SP-591S-B-9	17.0	CY	Dry Rock Riprap, Class III, Stormdrain Outfall A	$_____	$_____
SP-591S-B-10	1.9	CY	Dry Rock Riprap, Class I, Stormdrain Outfall B	$_____	$_____
SP-591S-B-11	6.5	CY	Dry Rock Riprap, Class III, Stormdrain Outfall C	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
SP-591S-B-12	36.3	CY	Dry Rock Riprap, Class I, Slope Protection Underneath Pedestrian Bridge	$_____	$_____
SP-591S-B-13	15.5	CY	Dry Rock Riprap, Class I, Scour Protection, STA 1+80 TO 2+08	$_____	$_____
SP-591S-B-14	1.5	CY	Dry Rock Riprap, Class I, Scour Protection Between Riffle V AND Riffle VI, STA 6+60 TO 6+80	$_____	$_____
SP-591S-B-15	1.9	CY	Dry Rock Riprap, Class I, Scour Protection Between Riffle VI AND Riffle VII, STA 7+50 TO 7+75	$_____	$_____
SP-591S-B-16	90.0	CY	Dry Rock Riprap, Class III, Scour Protection Downstream of Denver Culvert Crossing, STA 10+17 TO 10+73	$_____	$_____
SP-601S-A	615	CY	Salvage and Place Topsoil: Streambank (includes compost amendment)	$_____	$_____
SP-601S-B	163	CY	Salvage and Place Topsoil: Channel Bottom (no compost amendment)	$_____	$_____
SP-602S-B	590	SY	Block Sodding - 'Eco' Buffalo grass sod with Blue Grama overseed, 100% coverage, plan quantity	$_____	$_____
SP-606S-C	17	CY	Soil Amendments to salvaged topsoil: Stream Restoration Area	$_____	$_____
SP-608S-1A	793	EA	Planting Type 4" container/plug/bare root Native Species, Per Plans, Planting Tables And Details	$_____	$_____
SP-608S-1B	835	EA	Planting Type 1-Gallon Native Species, Per Plans, Planting Tables And Details	$_____	$_____
SP-608S-1C	86	EA	Planting Type 5 gallon Native Species, Per Plans, Planting Tables and Details	$_____	$_____
SP-608S-1D	2	EA	Planting Type 15 gallon Native Species, Per Plans, Planting Tables and Details	$_____	$_____
SP-608S-1E	8	EA	Planting Type 20 gallon Native Species, Per Plans, Planting Tables and Details	$_____	$_____
SP-608S-1F	19	EA	Planting Type 2" caliper trees	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
SP-608S-2	4	CY	Hardwood mulch, 3" thick x 3' diameter rings (0.03 cy/tree)	$_____	$_____
SP-608S-3	29	EA	Tree Support System, per tree	$_____	$_____
SP-608S-5	1	LS	Management Practices	$_____	$_____
SP-608S-6	1950	LF	Temporary Fencing	$_____	$_____
SP-609S-A	2149	SY	Native Grassland Seeding: Blackland Prairie Mix , HP-FGM Hydromulch	$_____	$_____
SP-609S-B	984	SY	Native Grassland Seeding: Wetland Fringe Mix , HP-FGM Hydromulch	$_____	$_____
SP-610S-R-2:	1	EA	Removal of Existing Trees, 9"-13" Caliper	$_____	$_____
SP-610S-R-3:	1	EA	Removal of Existing Trees, 14"-18" Caliper	$_____	$_____
SP-610S-R-4:	3	EA	Removal of Existing Trees, 19"-23" Caliper	$_____	$_____
SP-640S-A	99	SF	Mortared Rock Wall - Storm Sewer Outfall Retrofit A	$_____	$_____
SP-640S-B	255	SF	Mortared Rock Wall - Storm Sewer Outfall Retrofit B	$_____	$_____
SP-640S-C	85	SF	Mortared Rock Wall - Storm Sewer Outfall Retrofit C, Including Flow Spreader	$_____	$_____
SS-603-A-SCI	1	LS	Temporary Irrigation System, above-ground installation and removal, for stream channel improvements	$_____	$_____
SS-603-D-SCI	1250	KGAL	Temporary Irrigation System - water budget (5 years), for stream channel improvements	$_____	$_____
SS-612-SCI	28	CY	Topsoil Mix – 6” Thick	$_____	$_____
SS-661-1	1	EA	Log Structure 1: Salvage, Storage, and Installation	$_____	$_____
SS-661-2	1	EA	Log Structure 2: Salvage, Storage, and Installation	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
SS-661-3	1	EA	Log Structure 3: Salvage, Storage, and Installation	$_____	$_____
SS-661-4	1	EA	Log Structure 4: Salvage, Storage, and Installation	$_____	$_____
SS-698-A	1	LS	Cofferdam and Site Dewatering	$_____	$_____
SS-1311-A	1	LS	Removal of Existing Bench and Trash Receptacle	$_____	$_____
SS-1311-B	1	EA	Installation of New Park Bench	$_____	$_____
SS-1311-C	1	EA	Installation of New Trash Receptacle	$_____	$_____
SS-1311-D	0.5	CY	Installation of Concrete Pad	$_____	$_____
			Sub-Total Stream Channel Improvements		**$**_____
_	_	_	_		
			Urban Trail and Swale Improvements		

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
104S-A	1855	LF	Remove P.C. Concrete Curb	$_____	$_____
SP104S-A	1550	LF	Sawcut Existing P.C. Concrete Curb at Minimum One (1) Foot From Lip of Gutter. Remove Remaining Gutter and Curb, Leaving an Intact Minimum One (1) Foot Wide Ribbon Curb.	$_____	$_____
110S-B	436	CY	Street Excavation, Plan Quantity	$_____	$_____
120S-B:	278	CY	Channel Excavation, Plan Quantity	$_____	$_____
130S-B:	20	CY	Class B (Borrow), Plan Quantity	$_____	$_____
201S	100	SY	Subgrade Preparation	$_____	$_____
210S-A	70	CY	Flexible Base, 8 In	$_____	$_____
315S-A:	1350	SY	Surface Milling	$_____	$_____
SP315S-A:	1400	LF	Surface Milling - Place Two (2) Foot Wide x Six (6) Inch Deep Compacted Salvaged Asphalt Millings.	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
340S-B2	100	SY	Hot Mix Asphalt Concrete Pavement, 2 In, Type D	$_____	$_____
648S:	255	LF	Mulch Sock	$_____	$_____
SP-602S-A	1668	SY	Block Sodding 'Tifway 419' Bermuda grass, 100% coverage, plan quantity	$_____	$_____
SP-604S-A3	2108	SY	Non-native Seeding for Erosion Control Method, BFM Hydromulch or FRM	$_____	$_____
SP-608S-1C	25	EA	Planting, 5 gal. container	$_____	$_____
SP-608S-1D	71	EA	Planting, 15 gal. container	$_____	$_____
SP-608S-1G	3	EA	Planting, 3" caliper	$_____	$_____
SS-603-A-UT	1	LS	Temporary Irrigation System, above-ground installation and removal, for urban trail and swale	$_____	$_____
SS-603-C	96	HR	Temporary Irrigation System, Hand-watering with water truck	$_____	$_____
SS-603-D-UT	542	KGAL	Temporary Irrigation System - water budget (3 years), for urban trail and swale	$_____	$_____
SP-608S-2	10	CY	Mulch - for trees	$_____	$_____
SP-608S-3	74	EA	Tree Support Systems, per tree		
SP-610S	1081	LF	Protective Fencing	$_____	$_____
SS-612-UT	633	CY	Topsoil Mix - 6" thick	$_____	$_____
			Sub-Total Urban Trail and Swale Improvements		**$_____**

			Hike & Bike Trail Improvements		
Bid Item	**Quantity**	**Unit**	**Item Description**	**Unit Price**	**Amount**
1301S-B	1276	SY	Granite Gravel Hike and Bike Trail	$_____	$_____
			Sub-Total Hike & Bike Trail Improvements		

Rain Garden Improvements

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
111S-A:	275	CY	Excavation	$_____	$_____
210S-A	7	CY	Flexible Base, 8 In, under proposed Mortared Rock Riprap	$_____	$_____
506S CN 18	1	EA	Connect Proposed 18" RCP lateral to Existing Storm line in Denver	$_____	$_____
506S M5	1	EA	Standard Pre-Cast Manhole w/Pre-cast Base, 5' Dia.	$_____	$_____
508S IG	1	EA	Inlet, Grated, 2ft x 2ft	$_____	$_____
510-ASD-18III	20	LF	Pipe, 18" Dia. RCP Class III (all depths), including excavation and backfill	$_____	$_____
SP-591S-C	6	CY	Cobble, (Texas Cobble), 3" - 5" Diameter	$_____	$_____
SP-591S-D	20	SY	Flagstone, (Brown Patio), 12" L x 2" H x 10" W	$_____	$_____
SP-640S-D	320	SF	Mortared Rock Wall - Rain Garden, 12" X 6" X 24" Limestone (and 10 pieces of 12" X 5" X 24")	$_____	$_____
SS-603-A-RG	1	LS	Temporary Irrigation System, above-ground installation and removal, for rain gardens	$_____	$_____
SS-603-D-RG	330	KGALl	Temporary Irrigation System - water budget (3 years), for rain gardens	$_____	$_____
SP-608S-1A	362	EA	Planting Type 4" container Native Species, Per Plans, Planting Tables And Details	$_____	$_____
SP-608S-1B	229	EA	Planting Type 1-Gallon Native Species, Per Plans, Planting Tables And Details	$_____	$_____
SP-608S-1C	4	EA	Planting Type 5 gallon Native Species, Per Plans, Planting Tables and Details	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
SP-608S-2	35	CY	Mulch (gravel)	$_____	$_____
SP-608S-4	157	LF	Steel Edging, 4"x3/16"	$_____	$_____
SS-612-RG	111	CY	Topsoil Mix - 6" thick		
			Sub-Total Rain Garden Improvements		**$_____**

Transportation Improvements

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
104S-A	1050	LF	Remove P.C. Concrete Curb	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
104S-C	750	SF	Remove P.C. Concrete Sidewalks and Driveways	$_____	$_____
110S-B	265	CY	Street Excavation, Plan Quantity	$_____	$_____
201S	270	SY	Subgrade Preparation	$_____	$_____
210S-A	70	CY	Flexible Base, 8 In	$_____	$_____
340S-B2	350	SY	Hot Mix Asphalt Concrete Pavement, 2 In, Type D	$_____	$_____
340S-B2	2200	SY	Hot Mix Asphalt Concrete Pavement, 2 In, Type D (Overlay)	$_____	$_____
430S-A	2878	LF	P.C. Concrete Curb And Gutter (Excavation)	$_____	$_____
430S-A2	120	LF	P.C. Concrete Curb and Gutter (Laydown Ribbon Curb at Swale - Road intersections)	$_____	$_____
432S-4:	600	SF	New P.C. Concrete Sidewalks, 4 Inch thickness	$_____	$_____
433S-C	300	SF	Type II P.C. Concrete driveway	$_____	$_____
480SNS:	1670	SF	Concrete Paver Units for Sidewalks, 60 mm (2-3/8") thick	$_____	$_____
510-A:	240	LF	Pipe, _2"_Dia. _Schedule 40 PVC_(all depths), including Excavation and Backfill	$_____	$_____

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
824S	3	EA	Remove Existing Traffic Sign	$_____	$_____
871S - A4W	2133	LF	Reflectorized Type I Thermoplastic Pavement Markings, 4 Inch In Width, 90 Mils In Thickness, Solid White In Color	$_____	$_____
871S - A4Y	700	LF	Reflectorized Type I Thermoplastic Pavement Markings, 4 Inch In Width, 90 Mils In Thickness, Solid Yellow In Color	$_____	$_____
871S-A24W	50	LF	Reflectorized Type I Thermoplastic Pavement Markings, 24 Inch In Width, 90 Mils In Thickness, Solid White In Color	$_____	$_____
871S-A12W	200	LF	Reflectorized Type I Thermoplastic Pavement Markings, 12 Inch In Width, 90 Mils In Thickness, Solid White In Color	$_____	$_____
871S-A8W-S	400	LF	Reflectorized Type I Thermoplastic Pavement Markings, 8 Inch In Width, 90 Mils In Thickness, Solid White In Color	$_____	$_____
871S-D-1	15	EA	Reflectorized Type I Thermoplastic Pavement Symbols (Triangle), 90 Mils In Thickness, White In Color	$_____	$_____
871S-D-2	18	EA	Reflectorized Type I Thermoplastic Pavement Symbols (Arrow), 90 Mils In Thickness, White In Color	$_____	$_____
871S-D-3	18	EA	Reflectorized Type I Thermoplastic Pavement Symbols (Bicycle), 90 Mils In Thickness, White In Color	$_____	$_____
871S-D-4	18	EA	Reflectorized Type I Thermoplastic Pavement Symbols (Pedestrian), 90 Mils In Thickness, White In Color	$_____	$_____
			Sub-Total Transportation Improvements		**$**_____
	-				
			Bridge Improvements		

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
104S-G	1	LS	Remove Miscellaneous P.C. Concrete - Remove 3 - 54" RCP Culverts Including Foundation, Headwalls and Wingwalls.	$_____	$_____
403S-CY-1	10	CY	Bridge Abutments and Concrete Bent Caps	$_____	$_____
403S-SY	124	SY	Concrete Topping Slab	$_____	$_____
420S-A	118	LF	Drilled Shaft, 24-inch Diameter	$_____	$_____
SS4466-A85S14W	1	EA	Prefab Truss Bridge (80' Span, 14' Wide)	$_____	$_____
SS4466-D	1120	SF	3" Deep X 16 Gauge Galvanized Form Deck	$_____	$_____
			Sub-Total Bridge Improvements		**$**_____
	-				
			General		

Bid Item	Quantity	Unit	Item Description	Unit Price	Amount
628S-D	5	EA	Filter Curb Inlet Protection (Existing Inlet)	$_____	$_____
641S	1	EA	Stabilized Construction Entrance	$_____	$_____
700S-TM:	1	LS	Total Mobilization Payment (4%)	$_____	$_____
701S-T	335	LF	Temporary Fence, 6 Feet High, Type Chain Link	$_____	$_____
701S-CD	2	EACH	Chain Link Vehicular Double Swing Gate, 6 FOOT BY 20 FOOT	$_____	$_____
802S-B C.I.P.:	2	EA	C.I.P. Project Sign	$_____	$_____
803S-CD:	270	Per Calendar Day.	Barricades, Signs, and Traffic Handling	$_____	$_____
803S-SF:	2500	LF	Safety Fence (Orange)	$_____	$_____
			Sub-Total General		**$**_____
	-				
			Sub-Total Stream Channel Improvements		**$**_____
			Sub-Total Urban Trail and Swale Improvements		**$**_____

Sub-Total Hike & Bike Trail Improvements	**$_____**
Sub-Total Rain Garden Improvements	**$_____**
Sub-Total Transportation Improvements	**$_____**
Sub-Total Bridge Improvements	**$_____**
Sub-Total General	**$_____**
Grand Total	**$_____**

Allowance #1: Stream Channel Improvements Extended Landscape Maintenance (Five Years Total) **$__56,000__**

Allowance #2: Urban Trail and Swale and Two Rain Garden Improvements Extended Landscape Maintenance (Three Years Total) **$__16,500__**

Total Allowances **$__72,500__**

BASE PROPOSAL (GRAND TOTAL PLUS TOTAL ALLOWANCES) **$_____**

In the event of a mathematical error, the correct product, determined by using the "Unit Price" and "Quantity", and the correct sum, determined by totaling the correct line item Amounts, will prevail over the amount entered by the proposer. The unit prices shown above will be the unit prices used to tabulate the proposed amount and used in the Contract, if awarded by the City.

Notes:

- For a more detailed explanation of Bid allowances, see Section 1020.

Optional Information on pricing submitted by computer printout:

In lieu of handwritten unit prices in figures in ink on the Proposal forms above, Offeror, at their option, may submit an original computer printout sheet bearing certification by, and signature for, the Offeror. The unit prices shown on acceptable printouts will be the unit prices used to tabulate the Proposal and used in the Contract if awarded by the City. As a minimum, computer printouts must contain all information and in the format shown on the attached page: "Example of Proposal Prices Submitted by Computer Printout" form.

If a computer printout is used, the Offeror must still execute that portion of the unit price proposal form which acknowledges the Bid Guaranty, Time of Completion, Liquidated Damages, and all addenda that may have been issued.

Proposals with unit prices by computer printout may be rejected, if:

1. The computer printout does not include the required certification, set forth in the attached “Example”.
2. The computer printout is not signed in the name of the firm to whom the Project Manual was issued.

3. The computer printout is non-responsive or otherwise omits required items or includes items not shown on the proposal forms in the Project Manual.
4. The other required Bid documents issued by the City are not fully executed as provided above.
5. The signed Section 00300uCSP is not returned with the signed computer printout.

If the Proposal submitted contains both the form furnished by the City, completed according the instructions, and also a computer printout, completed according to the instructions, unit prices of only one will be considered. In this situation, the unit prices shown on the computer printout will be used to determine the Proposal amount.

BID GUARANTY: A Bid guaranty must be enclosed with this Proposal, as required in Section 00020CSP, in the amount of not less than five percent (5%) of the total proposed amount. Following the opening of Proposals, Proposals may not be withdrawn for a period of (90) Calendar Days. Recommendation of award will occur within this period, unless mutually agreed between the parties. The bid guaranty may become the property of the OWNER, or the OWNER may pursue any other action allowed by law, if:

- Offeror withdraws its Proposal within the period stated above;
- Offeror fails to submit any required post proposal information within the period specified in Section 00020CSPS or 00100CSP, or any mutually agreed extension of that period; or
- Offeror fails to execute the Contract and furnish the prescribed documentation (bonds, insurance, etc.) needed to complete execution of the Contract within any mutually agreed extension period.

TIME OF COMPLETION: The undersigned Offeror agrees to commence work on the date specified in the written "Notice to Proceed" to be issued by the OWNER and to **substantially** complete construction of the improvements, as required by the Project Manual, Drawings and Addenda for the Work within **Two-Hundred Seventy (270) Calendar** Days. **The Offeror further agrees to reach Final Completion within Eighteen-Hundred Fify-Five (1,855) Calendar Days after Substantial Completion as required by the Project Manual, Drawings and Addenda for the work.** The Offeror further agrees that should the Offeror fail to **substantially** complete the Work within the number of days indicated in the Proposal or as subsequently adjusted, Offeror shall pay the liquidated damages for each consecutive day thereafter as provided below; unless the OWNER elects to pursue any other action allowed by law.

WAIVER OF ATTORNEY FEES: In submitting its proposal, in consideration for the waiver of its right to attorney's fees by the OWNER, the Offeror knowingly and intentionally agrees to and shall waive the right to attorney's fees under Section 271.153 of the Texas Local Government Code in any administrative proceeding, alternative dispute resolution proceeding, or litigation arising out of or connected to any Contract awarded pursuant to this solicitation process.

LIQUIDATED DAMAGES: The Offeror understands and agrees that the timely completion of the described Work is of the essence. The Offeror and OWNER further agree that the OWNER's actual damages for delay caused by failure to timely complete the Project are difficult, if not impossible to measure. However, with respect to the additional administrative and consultant costs to be incurred by OWNER, the reasonable estimate of such damages has been calculated and agreed to by OWNER and Offeror. Therefore, the Offeror and the OWNER agree that for each and every **Calendar Day** the Work or any portion thereof, remains incomplete after the **Substantial Completion** date as established by the above paragraph, "Time of Completion", payment will be due to the Owner in the amount of **Nine-Hundred Seventy** dollars **($970.00)** per **Calendar Day** as liquidated damages, not as a penalty, but for delay damages to the OWNER. **The Offeror and the OWNER further agree that for each and every Calendar Day the Work or any portion thereof, remains incomplete after the Final date as established by the above paragraph , "Time of Completion", payment will be due to the OWNER in the amount of**

Two-Hundred dollars ($200.00) per Calendar Day as liquidated damages, not as a penalty, but for delay damages to the OWNER. Such amount shall be deducted by the OWNER from any Contract payment due. In the event of a default or breach by the CONTRACTOR and demand is made upon the surety to complete the project, in accordance with the Contract Documents, the surety shall be liable for liquidated damages pursuant to the Contract Documents in the same manner as the CONTRACTOR would have been.

OWNER reserves the right to reject any or all Proposals and to waive any minor informality in any Proposal or solicitation procedure (a minor informality is one that does not affect the competitiveness of the Bids).

The undersigned acknowledges receipt of the following addenda:

Addendum No. 1 dated _____ Received _____

Addendum No. 2 dated _____ Received _____

Addendum No. 3 dated _____ Received _____

Addendum No. 4 dated _____ Received _____

Addendum No. 5 dated _____ Received _____

_____
Secretary, *if Offeror is a Corporation

_____
Offeror

_____
Authorized Signature

(Seal)

_____
Title

_____
Date

_____

_____
Address

_____
Telephone Number / FAX Number

_____
Email Address for Person Signing Bid

_____
Email Address for Bidder's Primary Contact Person

* Copy of Corporate Resolution and minutes with certificate of officer of Bidder as to authority of signatory to bind Bidder is to be signed and dated no earlier than one week before Bid date, and attached to this document.

END

EXAMPLE: BID PRICES SUBMITTED BY COMPUTER PRINTOUT

Project Name:
CIP ID #:
IFB #:

Bid Item #	***Bid Item Description***	***Unit***	***Qty***	***Unit Bid Price***	***Total Amount***
				Total Bid:	

(YOUR FIRM'S NAME) certifies that the unit prices shown on this completed computer printout for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its Bid will be tabulated using these unit prices and no other information from this printout. (YOUR FIRM'S NAME) acknowledges and agrees that the total bid amount shown will be read as its total bid. *In the event of a mathematical error*, the correct product, determined by using the "Unit Price" and "Quantity", and the correct sum, determined by totaling the correct line item Amounts, will prevail over the amount entered by the Bidder.

Signed: _____

Title: _____

Date: _____

End

The Supplemental General Conditions contained herein amend or supplement the General Conditions, Section 00700.

ARTICLE 1 - DEFINITIONS

Add the following definition:

"1.20 Engineer/Architect (E/A): Add the following:

Name: Kristin Pipkin, P.E.

Address: 505 Barton Springs Rd #1100 Austin TX 78704

and *Name: Kevin Sweat, P.E.*

Address: 505 Barton Springs Rd #900 Austin TX 78704"

ARTICLE 5 - BONDS AND INSURANCE

"5.3 Insurance:

5.3.1 CONTRACTOR Provided Insurance

5.3.1.1 General Requirements.

.1 CONTRACTOR shall carry insurance in the types and amounts indicated below for the duration of the Contract, which shall include items owned by OWNER in the care, custody and control of CONTRACTOR prior to and during construction and warranty period.

.2 CONTRACTOR must complete and forward the Certificate of Insurance, Section 00650, to OWNER before the Contract is executed as verification of coverage required below. CONTRACTOR shall not commence Work until the required insurance is obtained and until such insurance has been reviewed by OWNER. Approval of insurance by OWNER shall not relieve or decrease the liability of CONTRACTOR hereunder and shall not be construed to be a limitation of liability on the part of CONTRACTOR. CONTRACTOR must also complete and forward the Certificate of Insurance, Section 00650, to OWNER whenever a previously identified policy period has expired as verification of continuing coverage.

.3 CONTRACTOR's insurance coverage is to be written by companies licensed to do business in the State of Texas at the time the policies are issued and shall be written by companies with A.M. Best ratings of B+VII or better, except for hazardous material insurance which shall be written by companies with A.M. Best ratings of A- or better.

.4 All endorsements naming the OWNER as additional insured, waivers, and notices of cancellation endorsements as well as the Certificate of Insurance shall indicate: City of Austin, Contract Management Department, P.O. Box 1088, Austin, Texas 78767.

5.3.1.2 Business Automobile Liability Insurance. Provide coverage for all owned, non-owned and hired vehicles. The policy shall contain the following endorsements in favor of OWNER:

a) Waiver of Subrogation endorsement CA 0444;

b) 30 day Notice of Cancellation endorsement CA 0244; and

c) Additional Insured endorsement CA 2048.

Provide coverage in the following types and amounts:

.1 A minimum combined single limit of $500,000 per occurrence for bodily injury and property damage. Alternate acceptable limits are $250,000 bodily injury per person, $500,000 bodily injury per occurrence and at least $100,000 property damage liability each accident.

5.3.1.3 Workers' Compensation And Employers' Liability Insurance. Coverage shall be consistent with statutory benefits outlined in the Texas Workers' Compensation Act (Section 401). CONTRACTOR shall assure compliance with this Statute by submitting two (2) copies of a standard certificate of coverage (e.g. ACCORD form) to Owner's Representative for every person providing services on the Project as acceptable proof of coverage. The Certificate of Insurance, Section 00650, must be presented as evidence of coverage for CONTRACTOR. Workers' Compensation Insurance coverage written by the Texas Workers Compensation Fund is acceptable to OWNER. CONTRACTOR's policy shall apply to the State of Texas and include these endorsements in favor of OWNER:

a) Waiver of Subrogation, form WC 420304; and

b) 30 day Notice of Cancellation, form WC 420601.

The minimum policy limits for Employers' Liability Insurance coverage shall be as follows:

.1 $100,000 bodily injury per accident, $500,000 bodily injury by disease policy limit and $100,000 bodily injury by disease each employee.

5.3.1.4 Commercial General Liability Insurance. The Policy shall contain the following provisions:

a) Contractual liability coverage for liability assumed under the Contract and all contracts relative to this Project.

b) Completed Operations/Products Liability for the duration of the warranty period.

c) Explosion, Collapse and Underground (X, C & U) coverage.

d) Independent Contractors coverage (Contractors/ Subcontractors work).

e) Aggregate limits of insurance per project, endorsement CG 2503.

f) OWNER listed as an additional insured, endorsement CG 2010.

g) 30 day notice of cancellation in favor of OWNER, endorsement CG 0205.

h) Waiver of Transfer of Recovery Against Others in favor of OWNER, endorsement CG 2404.

Provide coverages A&B with minimum limits as follows:

.1 A combined bodily injury and property damage limit of $500,000 per occurrence.

5.3.1.7 Professional Liability Insurance. For Work which requires professional engineering or professional survey services to meet the requirements of the Contract, including but not limited to excavation safety systems, traffic control plans, and construction surveying, the CONTRACTOR or Subcontractors, responsible for performing the professional services shall provide Professional Liability Insurance with a minimum limit of $500,000 per claim and in the aggregate to pay on behalf of the assured all sums which the assured shall become legally obligated to pay as damages by reason of any negligent act, error, or omission committed with respect to all professional services provided in due course of the Work of this Contract.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.6 Permits, Fees: Add the following:

"OWNER will obtain and pay for the following permits, licenses and/or fees:

.1 Site Development Permit.

6.7 Laws and Regulations: Add the following:

"**6.7.4** This Work is subject to the Texas Pollution Discharge Elimination System (TPDES) permitting requirements for the installation and maintenance of temporary and permanent erosion and sediment controls and storm water pollution prevention measures throughout the construction period.

OWNER has prepared a Storm Water Pollution Prevention Plan (SWPPP). Reference Section 01096 for this SWPPP.

OWNER shall file the Owner's Notice of Intent and Notice of Termination to the Texas Commission on Environmental Quality (TCEQ). OWNER shall pay the TPDES storm water application fee.

CONTRACTOR's responsibilities are as follows.

.1 File a Notice of Intent (NOI) form with the TCEQ at least two (2) days prior to start of construction activity and pay for the permit. Form is available from OWNER or on the Internet at http://www.tceq.state.tx.us/assets/public/permitting/waterquality/forms/20022.pdf.

The form shall be mailed or submitted online to the TCEQ. If submitting online, the web address is https://www6.tceq.state.tx.us/steers/. If CONTRACTOR has not already registered to use the TCEQ online application submittal service, it will take up to ten (10) Working Days to receive a user name and password. CONTRACTOR shall take this timeframe into consideration if applying online. A Time Extension shall not be granted for this timeframe.

The mailing address is:

Texas Commission on Environmental Quality
Storm Water & General Permits Team; MC-228
P.O. Box 13087
Austin, TX 78711-3087

A copy of the completed Notice of Intent (NOI) form must also be mailed to the local Municipal Separate Storm Sewer Systems (MS4) representative:

TPDES Program Coordinator
City of Austin – WPD – ERM
P.O. Box 1088
Austin, TX 78767

.2 Obtain a signed certification statement from all Subcontractors responsible for implementing the erosion and sediment control measures. This statement shall indicate that the Subcontractor understands the permit requirements. The certified statement forms shall be attached to and become part of the SWPPP.

.3 Post a notice near the main entrance of the Work with the following information.

- The TPDES permit number for the Work or a copy of the NOI if a permit number has not yet been assigned,
- The name and telephone number of a local contact person,
- A brief description of the Work, and
- The location of the SWPPP if the site is inactive or does not have an on-site location to store the plan.

If posting this information near a main entrance is infeasible due to safety concerns, the notice must be posted in a local public building. If the Work is linear (pipeline, highway, etc.), the notice must be placed in a publicly accessible location near where construction is actively underway and moved as necessary. For linear Work, multiple postings of the information may be required by OWNER (e.g. postings at both ends of the Work).

.4 Maintain all erosion and sediment control measures and other protective measures identified in the SWPPP in effective operating condition.

.5 Perform inspections every five (5) working days and after every ½ inch rainfall event, noting the following observations on an inspection form provided by OWNER:

- Locations of discharges of sediment or other pollutants from the site.
- Locations of storm water / erosion / sedimentation controls that are in need of maintenance.
- Locations of storm water / erosion / sedimentation controls that are not performing, failing to operate, or are inadequate.
- Locations where additional storm water / erosion / sedimentation controls are needed.

.6 Maintain at Work site at all times a copy of the SWPPP (with all updates, as described below) and inspection reports.

.7 Update the SWPPP as necessary to comply with TPDES permitting requirements, which includes noting changes in erosion / sedimentation controls and other best management practices that are part of the SWPPP and which may be necessary due to the results of inspection reports. Any SWPPP revisions or updates must be signed and certified by a Certified Professional in Erosion and Sedimentation Control (CPESC) or a Registered Professional Engineer. If the SWPPP

includes engineering calculations, then SWPPP must be sealed and signed by a Registered Professional Engineer.

.8 File a Notice of Termination with the TCEQ within thirty (30) days of final stabilization on all portions of the Work site. Form is available from OWNER or on the Internet at http://www.tceq.state.tx.us/assets/public/permitting/waterquality/forms/20023.pdf.

The NOT shall be mailed to:
Storm Water & General Permits Team; MC-228
P.O. Box 13087
Austin, TX 78711-3087
(512) 239-4671

.9 Upon completion of the Work, provide TPDES records to OWNER."

6.11 Safety and Protection: Add the following paragraph 6.11.7:

"6.11.7 If the Contractor fails to carry out the Work in accordance with the Contract Documents so that a safety violation has occurred, the Owner may order the Contractor to stop the Work or any portion thereof, until the cause for such order has been eliminated. However, the right of the Owner to stop the Work under this paragraph shall not give rise to a duty on the part of the Owner to supervise the Contractor's Work or to control the Contractor's means and methods or to exercise this right for the benefit of the Contractor or any other person or entity. All time lost due to Project shut down will be the Contractor's sole responsibility, will be charged against the Contract Time, and the Contractor will be responsible for any and all expenses incurred. This provision is in addition to and supplemental to the applicable provisions of the Project's ROCIP Safety Manual."

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.3 Tests and Inspections: Delete 13.3.1 thru 13.3.5 and replace with the following:

13.3.1 "CONTRACTOR shall give timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.3.2 OWNER shall employ and pay for services of an independent testing laboratory to perform all inspections, tests or approvals required by the Contract Documents except:

.1 for inspections, tests or approvals covered by paragraphs 13.3.3 and 13.3.4 below;

.2 that costs incurred for tests or inspections conducted pursuant to paragraph 13.4.3 shall be paid as provided in paragraph 13.4.3;

.3 for reinspecting or retesting defective Work, including any associated costs incurred by the testing laboratory for cancelled tests or standby time; and

.4 as otherwise specifically provided in the Contract Documents.

13.3.3 If laws or regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full

responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith and furnish Owner's Representative the required certificates of inspection or approval.

13.3.4 CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and E/A's review of submittals covering materials, equipment, and mix designs to be incorporated in the Work.

13.3.5 All testing laboratories shall meet the requirements of ASTM E-329."

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.7 Substantial Completion:
Reference 14.7.1, and add the following provision:

"14.7.3 All channel improvements, including but not limited to excavation, demolition, final grading, rock riprap grade controls, log habitat structures, boulder hop crossings, storm sewer and spring outfall retrofits, mortared rock walls, swales and pools, soil retention blanket, turf reinforcement mat, and invasive species removal shall be complete and operational. All transportation, connectivity, and associated water quality improvements, including but not limited to urban trail, roadway, bridge, water quality swale, rain gardens, decomposed granite park trail, and trash receptacle and bench, shall be complete, operational, and in service. All landscape improvements, including but not limited to installation of hardscapes, trees, other plantings, seedings, sodding, and temporary irrigation systems shall be complete and operational."

"14.8.1 OWNER at any time may request CONTRACTOR to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR shall certify to Owner's Representative that such part of the Work is substantially complete and request Owner's Representative to issue a certificate of substantial Completion for that part of the Work. CONTRACTOR at any time may notify Owner's Representative that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request Owner's Representative to issue a certificate of Substantial Completion for that part of the Work. The provisions of paragraphs 14.7.1, 14.7.2, and 14.7.3 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto. "

14.10 Final Application for Payment: Add the following paragraph(s) to 14.10:

".11 TPDES records in accordance with 6.7.4."

END

PREVAILING WAGE RATE DETERMINATION

HEAVY AND HIGHWAY CONSTRUCTION

COUNTY NAME: TRAVIS

Wages based on DOL General Decision:TX140016 01/03/2014 TX16

Classification	Wage Rate	Classification	Wage Rate
Agricultural Tractor Operator	$ 12.69	Laborer, Utility	$ 12.27
Asphalt Distributor Operator	$ 15.55	Loader/Backhoe Operator	$ 14.12
Asphalt Paving Machine Operator	$ 14.36	Mechanic	$ 17.10
Asphalt Raker	$ 12.12	Milling Machine	$ 14.18
Boom Truck Operator	$ 18.36	Motor Grader Operator - Fine Grade	$ 18.51
Broom or Sweeper Operator	$ 11.04	Motor Grader Operator - Rough	$ 14.63
Cement Mason/Concrete Finisher	$ 12.56	Painter - Structures	$ 18.34
Concrete Pavement Finishing Machine		Pavement Marking Machine Operator	$ 19.17
Operator	$ 15.48	Pipelayer	$ 12.79
Crane, Hydraulic 80 tons or less	$ 18.36	Reclaimer/Pulverizer	$ 12.88
Crane, Lattice Boom, 80 tons or less	$ 15.87	Reinforcing Steel Setter	$ 14.00
Crane, Lattice Boom, over 80 tons	$ 19.38	Roller Operator, Asphalt	$ 12.78
Crawler Tractor	$ 15.67	Roller Operator, Other	$ 10.50
Directional Drilling Locator	$ 11.67	Scraper Operator	$ 12.27
Directional Drilling Operator	$ 17.24	Servicer	$ 14.51
Electrician	$ 26.35	Spreader Box Operator	$ 14.04
Excavator, 50,000 lbs. or less	$ 12.88	Structural Steel Worker	$ 19.29
Excavator, over 50,000 lbs.	$ 17.71	Traffic Signal Installer/Light Pole Worker	$ 16.00
Flagger	$ 9.45	Trenching Machine Operator, Heavy	$ 18.48
Form Builder/ Setter, Structures	$ 12.87	Truck Driver Tandem Axle Semi-Trailer	$ 12.81
Form Setter - Paving & Curb	$ 12.94	Truck Driver, Lowboy-Float	$ 15.66
Foundation Drill Operator,		Truck Driver, Single Axle	$ 11.79
Truck Mounted	$ 16.93	Truck Driver, Off Road Hauler	$ 11.88
Front End Loader Operator, 3CY or less	$ 13.04	Truck Driver, Single or Tandem Axle Dump Truck	$ 11.68
Front End Loader Operator, over 3 CY	$ 13.21	Welder	$ 15.97
Laborer, Common	$ 10.50	Work Zone Barricade Servicer	$ 11.85

http://www.wdol.gov/wdol/scafiles/davisbacon/tx.html

The Wage Compliance information detailed below was excerpted from General Decision TX20070043 or other DOL sources.

1. **Additional Trade information:**
   Unlisted classifications needed for work not listed within the scope of the classifications listed may be added upon the advance approval of Contract Procurement. CONTRACTOR shall submit to City of Austin Contract Procurement the following: classification, a bona fide definition of work to be performed and a proposed wage with sample payrolls conforming to area practice **prior** to the start of the job for that type of work. Proposed trade may not be performed by any trade already listed.

2. **Wages**
   For overtime, the basic hourly rate listed in the contract wage determination must be used in computing pay obligations.

3. Proper Designation of Trade

A work classification from the Prevailing Wage Poster for each worker must be made based on the actual type of work he/she performed on the job. In summary the work performed, not the "title" determines the correct worker classification and wage. Each worker must be paid no less than the wage rate on the wage decision for that classification **regardless** of his/her level of skill (exclusive of a bona fide apprentice currently registered in a DOL approved apprentice program - proof of individual registration must be supplied in advance to the City of Austin).

4. Split Classification

If a firm has employees that perform work in more than one classification, it can pay the wage rates specified for each classification ONLY if it maintains accurate time records showing the amount of time spent in each classification. If accurate time records are not maintained, these employees must be paid the highest wage rate of all the classifications of work performed by each worker. Accurate time records tracking how many hours a worker performed the work of one trade and then switched to another trade must be accounted for on a daily basis and reflected on Employer Certified Payroll accordingly.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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PART 1 - GENERAL

1.1 Related Documents:

Drawings and general provisions of Contract, including General Conditions, Section 00700, and Supplemental General Conditions, Section 00810, and Division 1 requirements.

1.2 DESCRIPTION OF WORK:

1.21 Scope of Work

A. This section describes the Project in general and provides an overview of the extent of the Work to be performed by the CONTRACTOR. Detailed requirements and extent of Work is stated in the applicable Specification Sections and shown on the Drawings. CONTRACTOR shall, except as otherwise specifically stated herein or in any applicable part of these Contract Documents, provide and pay for all labor, materials, equipment, tools, construction equipment, and other facilities and services necessary for proper execution, testing, and completion of the Work.

B. Any part or item of the Work which is reasonably implied or normally required to make the installation satisfactorily operable shall be performed by the CONTRACTOR and the expense thereof shall be included in the applicable unit prices or lump sum prices bid for the Work. It is the intent of these Specifications to provide the OWNER with the complete system. All miscellaneous appurtenances and other items of Work that are incidental to meeting the intent of the Specifications shall be considered as having been included in the applicable unit prices or lump sum prices bid for the Work even though these appurtenances and items may not be specifically called for in the Bid Documents.

C. The Work of this Contract comprises the aforementioned general components but is not limited to furnishing all tools, labor, materials, equipment, and miscellaneous items necessary for the complete construction of approximately 975 LF of stream restoration; two boulder crossings; eight riffle structures; four log habitat structures; demolition and removal of the culverts at Pershing Drive; installation of a pedestrian bridge in J.J Seabrook Greenbelt; storm sewer line retrofits at three lines within the J.J. Seabrook Greenbelt; 2,314 LF of granite gravel trail; vegetated water quality swales and two rain gardens; invasive vegetation removal; native landscape and riparian restoration planting; temporary irrigation system; three to five years of landscape establishment depending on location within the project area, maintenance, and restoration per Special Specification No. 611; and construction of the urban trail and related transportation improvements.

D. The Work of this Contract includes sustainability requirements as shown in the Division 1 Section 01352 and/or 01505 and all other applicable specification sections. It is the intent of the Owner to work in partnership with the Contractor in implementing sustainable construction and maintenance practices to the greatest extent possible.

E. Due to the multidisciplinary nature of this project, the CONTRACTOR should carefully review the Drawings, Standard Specifications, Special Provisions, and Special Specifications for this project and strategically organize a best qualified team to successfully implement the project, including specialized work in the Landscape Plan (as shown in Drawings) and Extended Landscape Maintenance specification (as specified in Special Specification No. 611). All associated and necessary work such as traffic control, erosion and sedimentation controls, tree protection, landscaping, irrigation, etc. are included in the work.

1.22 Location of Project

A. The Project begins at Manor Road and Pershing Drive and continues down Pershing Drive through the J.J. Seabrook Greenbelt to Martin Luther King, Jr. Boulevard. A project map and the project location/route are shown in the Drawings.

1.23 Contractor's Responsibilities

A. Execute all Work, including stream restoration work, urban trail work, native landscape and riparian vegetation establishment and maintenance, pedestrian bridge, culvert removal, rain gardens, vegetated swale, storm sewer retrofits, excavation, installing pipe, backfill, miscellaneous concrete and testing. The Work of this Contract is specified in the City of Austin Standard Specifications, Special Provisions and Special Specifications listed in the Table of Contents.

B. Secure all construction-related permits, other than those provided by OWNER as described in paragraph 6.6 of Section 00810, Supplemental General Conditions, and pay for the same.

C. Arrange for the necessary temporary water and electric service, pay for these services, and all water and electricity consumed during the construction Work.

D. Provide adequate temporary sanitary facilities.

1.24 Easements and Rights-Of-Way

CONTRACTOR shall confine the construction operations within the limits indicated on the Drawings, and shall use due care in placing construction tools, equipment, excavated materials, and pipeline materials and supplies so as to cause the least possible damage to property and interference with traffic. If the CONTRACTOR requires additional easement for his operations, the CONTRACTOR is solely responsible for acquisition and maintenance of the easement. No additional compensation will be provided by the OWNER.

A. Easements

Easements across private property are indicated on the Drawings. CONTRACTOR shall set stakes to mark the boundaries of construction easement across private property. The stakes shall be protected and maintained until completion of construction and cleanup.

B. Rights-of-Way

Permits for Work in rights-of-way shall be obtained by the CONTRACTOR. All Work performed and all operations of CONTRACTOR, CONTRACTOR employees, or subcontractors, within the limits of railroad and highway rights-of-way, shall be in conformity with the requirements and be under the control (through OWNER) of the railroad or highway authority owning, or having jurisdiction over and control of, the right-of-way in each case.

1.25 Operation of Existing Facilities

Existing water and wastewater facilities shall be kept in continuous operation throughout the construction period. No interruption will be permitted which adversely affects the degree of service provided. Provided permission is obtained from OWNER in advance, portions of the existing facilities may be taken out of service for short periods corresponding with periods of minimum service demands.

CONTRACTOR shall provide temporary facilities and make temporary modifications as necessary to keep the existing facilities in operation during the construction period.

1.26 Connections to Existing Facilities

Unless otherwise specified or indicated, CONTRACTOR shall make all necessary connections to existing facilities including structures, drain lines, and utilities. In each case, CONTRACTOR shall receive permission from OWNER or the owning utility prior to undertaking connections. CONTRACTOR shall protect facilities against deleterious substances and damage.

Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials and labor shall be on hand at the time of undertaking the connection. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

1.27 Unfavorable Construction Conditions

No portion of the Work shall be constructed under conditions which adversely affect the quality or efficiency thereof, unless special means or precautions are taken by CONTRACTOR to perform the Work in a proper and satisfactory manner.

1.3 SUBMITTALS

Provide shop drawings and other information as required by Section 01300 for coordination of the work.

1.4 CONTRACTOR'S USE OF CONSTRUCTION SITE

The construction site is located with the public right-of-way and a public greenbelt. The public greenbelt will be in use by the public throughout the duration of contract. The CONTRACTOR shall maintain the public's safety at all times throughout the duration of the project. The CONTRACTOR shall erect safety fencing to prevent the public's access to CONTRACTOR's operations and to prevent injury to the public.

The CONTRACTOR shall refer to Section 01040, “Project Coordination” for coordination required to minimize disturbance and hazards to pedestrian as well as automobile traffic. CONTRACTOR shall not unreasonably encumber the construction site with materials or equipment. CONTRACTOR shall assume reasonable responsibility for protection of construction site.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

End

PART 1 - GENERAL

1.1 Related Documents:

Drawings and general provisions of Contract, including General Conditions, Section 00700, and Supplemental General Conditions, Section 00810, and Division 1 requirements.

1.2 DESCRIPTION OF WORK

1.21 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Selected materials, equipment and installation are specified in the Contract Documents by allowances. Allowances are established to defer selection of actual materials and equipment until additional information is available. Additional requirements will be issued by Change Order.

B. Coordinate allowance work with related work to ensure complete integration with related work.

C. Submittals: Submit proposals for allowance work in the form specified for Change Orders.

D. Gaurantee for Allowances: All allowance materials or items shall be included in the Contractor's guarantee for the Project.

E. Any money remaining in the Allowances at the close of the Project shall be credited to the Owner.

F. Contractor shall not exceed any allowance amount in the order of materials or performance of work without Owner's prior written approval.

1.22 ALLOWANCES

Included in the Contract Proposal bid items are allowances for the following:

Allowance #1 Stream Channel Improvements Extended Landscape Maintenance:

Furnishing all tools, labor, materials, equipment, and miscellaneous items necessary, except watering, for the completion of 5 years extended maintenance of landscaping associated with 975 LF of Stream Channel Improvements per SS-611. The 5-year allowance total is not to exceed $56,000.

Allowance #2 Urban Trail and Swale and two (2) Rain Garden Improvements Extended Landscape Maintenance:

Furnishing all tools, labor, materials, equipment, and miscellaneous items necessary, except watering, for the completion of 3 years extended maintenance of landscaping associated with the Urban Trail and Swale, and two Rain Garden Improvements per SS-611. The 3-year allowance total is not to exceed $16,500.

ALLOWANCES
Section 01020

Before the start of this work, a proposal will be requested for one (1) year of extended landscape maintenance, including anticipated tasks and unit costs. Proposals will also be required for subsequent extended landscape maintenance years which will be negotiated annually. Total maximum not to exceed is noted above. The City of Austin's projected extended maintenance allowance per each year is as follows:

STREAM CHANNEL IMPROVEMENTS
Year 1 $15,000
Year 2 $15,000
Year 3 $10,000
Year 4 $8000
Year 5 $8000

URBAN TRAIL & SWALE (including Rain Gardens)
Year 1 $6500
Year 2 $5000
Year 3 $5000

End

SPECIAL PROVISION
TO
ITEM NO. 104S Removing Portland Cement Concrete

For this Project, Item No. 104S "Removing Portland Cement Concrete", of the City of Austin Standard Specifications, dated 09/26/12, is hereby amended with respect to the clauses cited below and no other clauses or requirements of this item are waived or changed hereby.

104S.6 Measurement

Add the following sentence at the end of the paragraph:

"Sawcut Existing P.C. Concrete Curb at Minimum One (1) Foot From Lip of Gutter. Remove Remaining Gutter and Curb, Leaving an Intact Minimum One (1) Foot Wide Ribbon Curb. Will be paid per linear foot.

104S.7 Payment

Add the following:

Pay Item No. SP104S-A:	"Sawcut Existing P.C. Concrete Curb at Minimum One (1) Foot From Lip of Gutter. Remove Remaining Gutter and Curb, Leaving an Intact Minimum One (1) Foot Wide Ribbon Curb. "		Per LInear Foot.

END

SPECIAL PROVISION
TO
ITEM NO. 315S Milling Asphaltic Concrete Pavement and Non-Portland Cement Concrete Bases

For this Project, ITEM NO. 315S "Milling Asphaltic Concrete Pavement and Non-Portland Cement Concrete Bases", of the City of Austin Standard Specifications, dated 09/26/12, is hereby amended with respect to the clauses cited below and no other clauses or requirements of this item are waived or changed hereby.

315S.6 Measurement

Add the following sentence at the end of the paragraph:

Surface Milling - Place Two (2) Foot Wide x Six (6) Inch Deep Compacted Salvaged Asphalt Millings. Shall be paid per linear foot.

315S.7 Payment

Add the following:

Pay Item No. SP315S-A: " Surface Milling - Place Two (2) Foot Wide x Six (6) Inch Deep Compacted Salvaged Asphalt Millings.. " Per LInear Foot.

END

SPECIAL PROVISION TO
Standard Specification Item No. 591S, Riprap for Slope Protection (Version 09/26/12)

For this project Item No. 591S Riprap for Slope Protection of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

Section 591S.1 Description

Add the following descriptions:

1. The work conducted under this item shall include dry rock riprap placed on and below the channel bottom to construct riffles and prevent scour and erosion.

2. The work conducted under this item shall include limestone boulders to construct boulder crossings as shown on the plans.

3. The work conducted under this item shall include flagstone to construct the proposed flow splitter to the rain garden at Denver Avenue.

4. The work conducted under this item shall include Cobble to prevent scour and erosion in the rain garden at Denver Avenue and the rain garden at Greenwood Avenue.

Section 591S.2 Submittals

Delete item A. and **Replace** with the following:

A. The type, size, gradation, physical properties, source of dry rock riprap material, and photo of dry rock riprap material. Test data for specific gravity, absorption, soundness, and verification plots with measurements for the gradation of the dry rock riprap. Photo shall clearly and accurately characterize the size, shape, and colors of the dry rock riprap. Include a scale in the photo.

Add the following:

G. The type, size, source, and photo of limestone boulders. Photo shall clearly and accurately characterize the size, shape, and colors of the limestone boulder. Prior to construction, include a sample for approval of quality assurance and color.

H. The type, size, source, and photo of flagstone. Photo shall clearly and accurately characterize the size, shape, and colors of the flagstone. Prior to construction, include a sample for approval of quality assurance and color. Include a scale in the photo.

I. The type, size, source, and photo of Cobble. Photo shall clearly and accurately characterize the size, shape, and colors of the Cobble. Prior to construction, include a sample for approval of quality assurance and color. Include a scale in the photo.

Section 591S.3 Materials

Delete paragraph A. Rock and **Replace** with the following:

A. Rock

The rock shall be suitable in all respects for the purpose intended. Rock sources shall be selected well in advance and submitted for review per Section 01300 prior to installation. Rock used for dry rock riprap shall be naturally weather, native dry riprap that varies in color to provide a natural aesthetic (See sample pictures below). Rock used for dry rock riprap shall be hard, durable, and angular in shape and consist of clean field rock or rough unhewn quarry rock as nearly uniform in section as practicable. Neither the width nor the thickness of a single rock shall be less than one third of its length. The rocks shall be dense, resistant to weathering and water action, and free of overburden, spoils, shale, and organic material. Shale, chalk, and limestone with shale or chalk seams shall not be acceptable.

The rock durability shall be evaluated by visual inspection and laboratory tests for specific gravity, absorption, and soundness. The minimum specific gravity shall be 2.4 (150 pounds per cubic foot) and the maximum absorption 4.2% using ASTM D 6473 or Tex-403-A. Soundness shall be tested in accordance with ASTM D 5240 or Tex-411-A and weight loss shall not exceed 18% after 5 cycles of magnesium sulfate solution, nor 14% after 5 cycles of sodium sulfate solution.

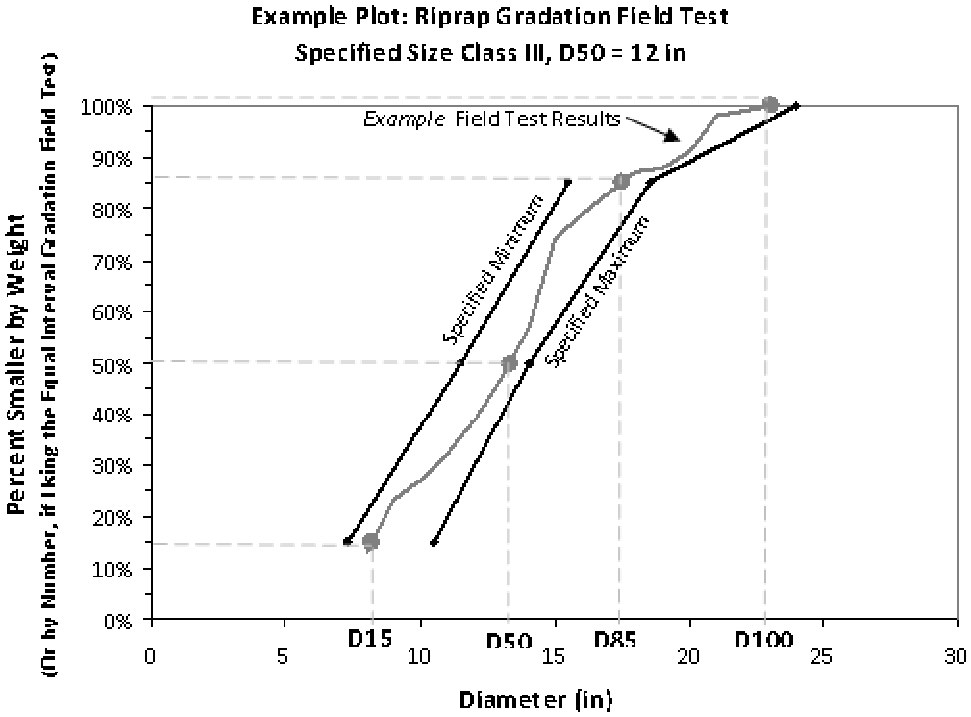
The dry rock riprap material shall be provided as a gradation of larger and smaller rock sizes associated with a rock class or median diameter (D50) as specified in the drawings. Rock diameter for angular material represents the length of the intermediate axis of an individual rock. The material gradation shall conform to table below for the class sizes corresponding to the D50. The D15, D50, D85, and D100 are the rock sizes for which 15%, 50%, 85%, and 100% of the total sample are of equal size or smaller, respectively.

Dry Rock Riprap Gradation Table

Dry Rock Riprap Class by Median Particle Diameter (D50)		D15 (in)		D50 (in)		D85 (in)		D100 (in)
Class	**Diameter (in)**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Max**
--	**4**	2.4	3.5	3.8	4.6	5.2	6.2	8.0
I	**6**	3.7	5.2	5.7	6.9	7.8	9.2	12.0
II	**9**	5.5	7.8	8.5	10.5	11.5	14.0	18.0
III	**12**	7.3	10.5	11.5	14.0	15.5	18.5	24.0
IV	**15**	9.2	13.0	14.5	17.5	19.5	23.0	30.0
V	**18**	11.0	15.5	17.0	20.5	23.5	27.5	36.0
VI	**21**	13.0	18.5	20.0	24.0	27.5	32.5	42.0
VII	**24**	14.5	21.0	23.0	27.5	31.0	37.0	48.0
VIII	**30**	18.5	26.0	28.5	34.5	39.0	46.0	60.0
IX	**36**	22.0	31.5	34.0	41.5	47.0	55.5	72.0
X	**42**	25.5	36.5	40.0	48.5	54.5	64.5	84.0

Reference: Adapted from NCHRP Report 568. (Conversion to weight-based gradation: $W = 0.0275D^3Sg$ where W is rock size in lbs, D is diameter in inches and Sg is the specific gravity of the rock.)

Conformance of rock riprap to the gradation requirements shall be accomplished by field tests for rock sizes that cannot be analyzed via sieve or mechanical sorting machines. Gradation field tests shall follow the equal interval test procedure in NCHRP Report 568, Section 3.2.3 or ASTM D 5519. Gradation test results shall be plotted with the acceptable range values for the specified rock class (example below):



The contractor shall provide a sample of the rock riprap material meeting the color and gradation for the size class specified. An approved sample shall be stored onsite as a reference for ongoing visual inspection of additional materials supplied. Supplementary tests may be required for supply materials where visual inspection determines their may be a deviation from the required gradation. Labor, equipment and site location needed to assist in checking gradation shall be provided by the contractor at no additional cost to the owner.

Add the following:

J. Limestone Boulders

The limestone boulders (boulders) used at boulder crossings shall be naturally weathered, native boulders, and submitted for review per Section 01300 prior to construction. Boulders should be irregular in shape with a rough surface on all edges and vary in color to provide a natural aesthetic (See sample pictures below). The top and bottom of the units shall be approximately parallel to provide a relatively flat surface at the boulder crest. No edges of the boulders shall be saw cut. Boulders shall be relatively uniform in height (minimum dimension) and within 15% of the dimensions specified. The length dimension may vary, but should be greater than or equal to 1.35 times the height dimension. The width dimension shall be relatively uniform and within 15% of the dimensions specified. Boulders shall be comprised of solid rock without excessive fractures, spalls, or weak layers to achieve these dimensions. The minimum specific gravity of the boulders shall be 2.4.

K. Flagstone

The flagstone used to construct the flow splitter to the rain garden at Denver Avenue shall be Custom Stone Supply, Brown Patio, or approved equal. Flagstone shall be submitted for review per Section 01300 prior to construction. Flagstone should be irregular in shape with a rough surface on all edges and vary in color to provide a natural aesthetic (See sample pictures below). Flagstone dimensions are approximately 12"L x 2"H x 10"W (length x height x width).

L. Cobble

The Cobble used to prevent scour and erosion in the rain garden at Denver Avenue and the rain garden at Greenwood Avenue shall be Custom Stone Supply, Texas Cobble, or approved equal. Cobble shall submitted for review per Section 01300 prior to construction. Cobble shall be irregular in shape and vary in color to provide a natural aesthetic (See sample pictures below). Cobble dimensions shall be 3" – 5" in diameter.

Section 591S.5 Dry Rock Riprap

Delete Section 591S.5 Dry Rock Riprap in its entirety and **Replace** with the following:

591S.5 Dry Rock Riprap and Limestone Boulders

Placement of dry rock riprap, granular filter layer, and limestone boulders shall conform to the following:

A. Excavation

Excavation for placement of dry rock riprap, granular filter layer, and limestone boulders shall be performed in accordance with Standard Specification Items No. 120S, No. 132S, and this specification. Contractor shall final grade for the placement of dry rock riprap, granular filter, and limestone boulders to the lines and grades shown on the construction drawings. The prepared base shall be approved by the Engineer or designated representative.

Contractor is responsible for embankment and excavation stability, including the cut-face and any required means to provide safety during the excavation and construction process. Standard Specification 509S Excavation Safety Systems shall apply. The Contractor shall remain solely and completely responsible for all Excavation Safety Systems and for the associated means, methods, procedures and materials

B. Preparation For Granular Filter Layer

Prepared surface on which the granular filter layer, dry rock riprap, or limestone boulders will be placed shall be firm and unyielding and exhibit a relatively smooth surface condition, free from obstruction, debris, depressions, erosion features, or vegetation. Remove any irregularities so as to ensure continuous, intimate contact of the granular filter layer with the entire surface. Any loose material or soft or low density pockets of material shall be removed; erosion features such as rills,

gullies, etc. shall be graded out of the surface before placement. The prepared subgrade shall be approved by the Engineer or designated representative.

C. Placement of Granular Filter Material on Prepared Subgrade and Dry Rock Riprap on Granular Filter Layer

The mass of dry rock riprap or granular filter material shall be placed as to be in conformance with the required gradation mixtures, to the lines, grades and layers thickness that is shown on the drawings.

The median dry rock riprap size (D50), dry rock riprap layer thickness, filter type, granular filter aggregate gradations (grade/size classification), granular layer thicknesses shall be specified on the plans. The minimum granular filter layer thickness shall be 6 inches (152.4 mm).

Dry rock riprap shall be machine placed and distributed such that there will be no large accumulations of either larger or smaller sizes. Placing dry rock riprap by dumping into chutes or similar methods shall not be permitted. The dry rock riprap shall be placed in a single layer with close joints. The dry rock riprap layer thickness shall be no less than the specified maximum stone size (D100) or 2.0 times the D50, which ever produces the greater thickness. In areas exposed to flowing water, the dry rock riprap layer thickness should be no less than 2.0 times the D50. The upright axis of the dry rock riprap shall make an angle of approximately 90 degrees with the embankment slope. The courses shall be placed from the bottom of the embankment upward, with the larger rocks being placed on the lower courses. Open joints or void spaces shall be filled with aggregate to the grade/size classification specified on the plans. The dry rock riprap shall be arranged to present a uniform finished top surface such that the variation between tops of adjacent rocks shall not exceed 1 inch (25.4 mm). Rocks that project more than the allowable amount in the finished work shall be replaced, embedded deeper or chipped."

D. Placement of Limestone Boulders for Boulder Crossings at Riffle III and Riffle VIII

Limestone boulders for boulder crossings shall conform to the size indicated on the construction plans. Boulders shall be placed to the lines, grades, elevations, orientation, and embedment indicated on the construction plans.

E. Placement of Embedment Material/Aggregate in Dry Rock Riprap

Aggregate shall be placed in accordance with the construction plans, Standard Specification 591S, and its associated Special Provision. All open joints and voids shall be filled with embedment material/aggregate to the grade/size classification specified on the plans.

Delete Section 591S.6 Mortared Rock Riprap in its entirety and **Replace** with the following:

Section 591S.6 Mortared Flagstone

A. Placement of Flagstone to Construct the Proposed Flow Splitter to the Rain Garden at Denver Avenue

Flagstone will be placed on top of 8" Compacted Flex Base per COA Specification 210S. Mortar bed should be 1" thick at minimum. Flagstone shall be placed in accordance with the

construction plans and the associated Special Provision. Spaces between flagstones should be one (1) inch maximum and all spaces shall be mortared. Final grades and elevations are crucial for proper drainage and all grades shall be uniform and accurate to within one (1) inch per ten (10) feet. Contractor may use mortar specified in COA Specification 640S as an alternate to the mortar specified in this section.

Delete Section 591S.8 Pneumatically Placed Concrete Riprap, Type I and Type II and **Replace** with the following:

Section 591S.8 Cobble

A. Placement of Cobble to Prevent Scour and Erosion in the Rain Garden at Denver Avenue and the Rain Garden at Greenwood Avenue

Cobble shall be placed in accordance with the construction plans to prevent scour and erosion in the rain garden at Denver Avenue and the rain garden at Greenwood Avenue.

Section 591S.9 Measurement

Delete first paragraph in 591S.p and **Replace** with the following:

Measurement of acceptable riprap will be made on the basis of the (a) area in square yards (square meters: 1 square meter equals 1.196 square yards) indicated on the Drawings, complete in place, (b) volume in cubic yards indicated on the Drawings, complete in place, or (c) the volume of concrete placed in cubic yards (cubic meters: 1 cubic meters equals 1.308 cubic yards), complete in place as indicated on the Drawings for the thickness specified.

Add the following:

Measurement of acceptable flagstone will be made on the basis of the (a) area in square yards (square meters: 1 square meter equals 1.196 square yards) indicated on the Drawings, complete in place.

Measurement of acceptable Cobble will be made on the basis of the (a) area in square yards (square meters: 1 square meter equals 1.196 square yards) indicated on the Drawings, complete in place.

Section 591S.10 Payment

Delete first paragraph in 591S.10 and **Replace** with the following:

The dry rock riprap quantities, measured as provided above, will be paid for at the unit prices of the volume of the D50 material bid per cubic yard as indicated for rip-rap of the various classifications shown, which price will be full compensation for furnishing, hauling and placing all materials including granular filter, embedment material, limestone boulders for boulder crossings at Riffle III and Riffle VIII and for all labor, tools, equipment incidentals necessary to complete the work.

Add the following:

The flagstone quantities, measured as provided above, will be paid for at the unit prices of the volume of the material bid per square yard, which price will be full compensation for furnishing, hauling and placing all materials including mortar, and for all labor, tools, equipment incidentals necessary to complete the work.

The Cobble quantities, measured as provided above, will be paid for at the unit prices of the volume of the material bid per cubic yard, which price will be full compensation for furnishing, hauling and placing all materials including all labor, tools, equipment incidentals necessary to complete the work.

Add the following:

Payment will be made under one of the following:

Pay Item No. SP-591S-B-1:	Dry Rock Riprap, Class I, Riffle I	Per Cubic Yard.
Pay Item No. SP-591S-B-2:	Dry Rock Riprap, Class I, Riffle II	Per Cubic Yard.
Pay Item No. SP-591S-B-3:	Dry Rock Riprap, Class I, Riffle III With Boulder Crossing	Per Cubic Yard.
Pay Item No. SP-591S-B-4:	Dry Rock Riprap, Class I, Riffle IV	Per Cubic Yard.
Pay Item No. SP-591S-B-5:	Dry Rock Riprap, Class I, Riffle V	Per Cubic Yard.
Pay Item No. SP-591S-B-6:	Dry Rock Riprap, Class I, Riffle VI	Per Cubic Yard.
Pay Item No. SP-591S-B-7:	Dry Rock Riprap, Class I, Riffle VII	Per Cubic Yard.
Pay Item No. SP-591S-B-8:	Dry Rock Riprap, Class I, Riffle VIII With Boulder Crossing	Per Cubic Yard.
Pay Item No. SP-591S-B-9:	Dry Rock Riprap, Class III, Stormdrain Outfall A	Per Cubic Yard.
Pay Item No. SP-591S-B-10:	Dry Rock Riprap, Class I, Stormdrain Outfall B	Per Cubic Yard.
Pay Item No. SP-591S-B-11:	Dry Rock Riprap, Class III, Stormdrain Outfall C	Per Cubic Yard.
Pay Item No. SP-591S-B-12:	Dry Rock Riprap, Class I, Slope Protection Underneath Pedestrian Bridge	Per Cubic Yard.
Pay Item No. SP-591S-B-13:	Dry Rock Riprap, Class I, Scour Protection, STA 1+80 TO STA 2+08	Per Cubic Yard.
Pay Item No. SP-591S-B-14:	Dry Rock Riprap, Class I, Scour Protection Between Riffle V and Riffle VI, STA 6+60 TO STA 6+80	Per Cubic Yard.
Pay Item No. SP-591S-B-15:	Dry Rock Riprap, Class I, Scour Protection Between Riffle VI and Riffle VII, STA 7+50 TO STA 7+75	Per Cubic Yard.
Pay Item No. SP-591S-B-16:	Dry Rock Riprap, Class III, Scour Protection Downstream of Denver Culvert Crossing, STA 10+17 TO STA 10+72	Per Cubic Yard.
Pay Item No. SP-591S-C:	Cobble, (Texas Cobble) , 3" – 5" Diameter	Per Cubic Yard.
Pay Item No. SP-591S-D:	Flagstone, (Brown Patio), 12" L x 2" H, 10" W	Per Square Yard.

End

Add the following specific cross reference materials:

“

SPECIFIC CROSS REFERENCE MATERIALS
Specification 591S, “Riprap for Slope Protection"

American Society for Testing and Materials, ASTM

Designation	Description
ASTM D 5240	Standard Test Method for Evaluation of Durability of Rock for Erosion Control Using Sodium Sulfate or Magnesium Sulfate
ASTM D 5519	Standard Test Methods for Particle Size Analysis of Natural and Man-Made Riprap Materials
ASTM D 6473	Standard Test Method for Specific Gravity and Absorption of Rock for Erosion Control

Texas Department of Transportation: Manual of Testing Procedures

Designation	Description
Tex-403-A	Test Procedure for Saturated Surface-Dry Specific Gravity and Absorption of Aggregates
Tex-411-A	Soundness of Aggregate Using Sodium Sulfate or Magnesium Sulfate

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 432	Riprap

“

SPECIAL PROVISION TO
Standard Specification Item 601S (Version 09-01-11)
Salvaging and Placing Topsoil

For this project Item 601S Salvaging and Placing Topsoil of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed by this Special Provision.

601S.1. Description

DELETE the first paragraph in its entirety and replace with the following:

This item shall govern the salvage, removal (only on direction of owner), storage and placement of existing and/or approved topsoil to the depths and areas shown on the plans or herein.

Different soil preparation techniques and mixes shall be used for different parts of the project.

1. Pershing Drive Urban Trail Area: This area extends from Manor Road through the Stream Restoration Area to Pershing Drive, and includes the swale adjacent to the urban trail and associated urban trail street trees and re-vegetated turf areas. Part of this area includes existing roadway pavement, and curb and gutter that will be removed and require vegetation establishment. Soil treatment in this area will differ from that of adjacent, unpaved areas as described below.
2. Denver Rain Garden and Greenwood Rain Garden Area: Two rain gardens will be constructed as part of this project; one is at the intersection of Pershing Drive and Greenwood Avenue, the other is at the intersection of Pershing Drive and Denver Avenue.
3. Stream Restoration Area: This area includes extends from an existing culvert on the south side of Denver Avenue to an existing culvert on the north side of E. Martin Luther King Jr. Boulevard. It includes both sides of Tannehill Branch – Tributary 1 within the J.J. Seabrook Greenbelt. Two distinct topsoil salvage zones occur within the Stream Restoration area:
    a. Streambank, and
    b. Channel bottom.
4. Park Trail Area: A five-foot-wide crushed granite trail will be constructed as part of this project in the J. J. Seabrook Greenbelt.

To restore ecological structure to the stream restoration portion of the project, the goal is to salvage and stockpile existing soil to preserve its original quantity and quality from within the restoration area.

Soil preparation methods will be subsidiary to the applicable sod, seed, or planting specifications.

Article 601S.2 Submittals

DELETE the paragraph in its entirety and replace with the following:

The submittal requirements of this specification item shall include the test results and soil classification necessary for approval of material as suitable growing medium. Other submittals and inspections include the following:

1. Activities Before Construction:
   (1) Preconstruction meeting to discuss the soil striping and stockpiling, and reinstallation of soils.
2. Submittals Required During Construction:
   (1) One gallon sample of all soil amendments proposed for use per SP606S.
   (2) Delivery tickets to indicate quantities of all soil amendments recommended by the soil analysis (Attachment A), including compost delivered to the site (see SP606S). Delivery ticket shall indicate source of materials and brand names.
   (3) Soil test shall be done after stockpiled soil is in place and has been amended to ensure sufficient amendment per recommendations of soil test (Attachment A). Tests should be done in locations shown on map in Attachment A.
3. Activities During Construction:
   (1) Landscape Architect to verify proper excavation and stockpiling of topsoil and other materials. Landscape Architect will meet with Contractor twice during excavation of topsoil, one visit on south side of Pershing Drive culvert and one visit on north side of Pershing Drive culvert. During one of these visits, Landscape Architect will inspect stockpiles in the storage area.
   (2) After rough grading Landscape Architect to inspect subsoil and subgrade areas to ensure:
      (a) they are free of debris;
      (b) proper compaction rates are met;
      (c) subgrade is excavated to proper depth and to proper slopes per grading plans;
      (d) They are roughened or scalloped per Figure 1.
   (3) During salvaged topsoil placement Landscape Architect to inspect for:
      (a) soil placement procedures: proper depths, layering, and transitioning;
      (b) proper compaction;
      (c) proper amendment type and procedures.

601S.3 Materials

A. Topsoil, #1.

DELETE #1 in its entirety and replace with the following:

Topsoil used on this project shall be:
1. Salvaged onsite topsoil, and
2. Imported topsoil mix.

The sources of the salvaged topsoil are shown on Sheet 16 of the construction plans, 'Topsoil Treatment Plan: Streambank and Channel.' Sheet 16 shows two areas where topsoil salvage is proposed:
1. Channel Bottom, and
2. Streambank.

The quantities of salvaged soil shown on the plans are approximate, and shall be field verified by the Contractor.

For the Stream Restoration area, amendment of the streambank salvaged topsoil shall follow recommendations made by Texas Plant and Soil Lab dated 4/18/2013 (Attachment A). No amendment to the channel bottom salvaged soil is required. Calculations done by the Landscape Architect, using mid-range values of fertilization recommendations produced by the soil lab, indicate that approximately 17 CY of compost will be required to amend the streambank salvaged topsoil. Contractor shall verify this amount and provide proposed amendment quantity to Landscape Architect for approval before ordering material.

The “Use Areas” for the two topsoil materials—salvaged and imported—are shown on Sheets 16 and 17 of the construction plans.

All imported topsoil mixes shall be locally available native materials (native to Austin, Texas) that meet the specifications in SS612.

Soil needed for fill areas of the Park Trail shall be obtained from areas of the greenbelt excavated for trail construction. No amendment of these materials is required.

601S.4 Sources

DELETE the paragraph in its entirety and replace with the following:

Topsoil for the Stream Restoration area shall be salvaged from the existing stream bank and channel that will be impacted by the proposed project as shown on the plans. Topsoil Mix for Pershing Drive Urban Trail and Rain Gardens shall conform to SS612, obtained from approved sources, which are located outside the project area and have been secured by the Contractor.

601S.5 Construction Methods

DELETE the third paragraph in its entirety and replace with the following:

The existing topsoil shall be removed from the area indicated on the Drawings, stockpiled in windrows for ease of loading and hauling and to promote seed stock and plant viability. Native soil salvaged from the site shall be stockpiled in locations shown on the drawings.

DELETE the last two sentences of the fourth paragraph.

DELETE the last paragraph.

ADD the following paragraphs:

Pavement Removal Areas:

Removal of pavement and associated base and sub-base shall follow Engineer’s recommendations and specifications, including provision for reducing compacting beneath planting areas. Subgrade compaction two to three feet below planting areas should be 75 to 80 percent dry density. To alleviate compaction the area shall be ripped or subsoil before soil placement. After shaping of disturbed areas, place six inches of landscape-grade topsoil (SS612) on a roughed or scalloped subsurface to facilitate establishment of vegetation.

Rain Gardens:

To facilitate establishment of vegetation in the rain gardens place six inches of landscape-grade topsoil complying with SS612. Till at least three inches of this soil into the native soil.

Stream Restoration Topsoil Salvage and Stockpiling:

The two areas from which soil salvage will occur - streambank and channel – will be treated and stored separately. The different deposits must be stored in separate piles and signed accordingly. Channel deposit must be kept moist at all times to ensure viability of biological properties.

1) Pre-salvage vegetation removal
   a) Existing vegetation on the streambank should be mowed short and scalped to remove as much vegetation as possible while leaving as much salvageable soil as possible.
2) Timing
   a) It is best not to undertake streambank topsoil salvage when the soil contains excessive moisture; optimal moisture content is 10% to 15% for streambank deposits. Channel bottom deposits will have higher moisture content.
3) Handling
   a) To preserve overall quality of the soil and preclude compaction, minimize vehicular traffic on soils to be stripped. Keep vehicular and pedestrian traffic off soil stockpiles. Loaders shall load and unload from the bottom of the stockpile.
   b) Topsoil Stockpiles shall be clearly labeled with signs on site.
   c) Topsoil stockpiles shall be monitored for ammonium buildup and temperature rise.
   d) Stockpiled Topsoil should be covered several weeks before reuse to limit additional soil moisture from precipitation.
4) Duration
   a) Stockpiles up to approximately five (5) feet high (1.5 m) maximum will stay healthy for up to a year, after which the structure and chemical composition markedly decreases, as will the viability of seeds and soil flora and fauna. Wide, shallow stockpiles are optimal for retention of microbes, viable seeds, etc.
   b) For soil health, minimize the amount of time that topsoil remains stockpiled.
5) Erosion and Flooding Protection
   a) The streambank stockpile should be seeded for stabilization and to maintain soil health if they are to sit in place for more than a month. Vegetating the stockpile will help maintain viability of the soil's fungi and microbial communities. Soil stockpiles should be seeded within 10 days of forming the stockpile.
   b) From September 15 to March 1, stockpile seeding shall be a cool season cover crop: Wheat (*Triticum aestivum*), Oats (*Avena sativa*), or Cereal Rye Grain (*Secale cereal*). From March 2 to September 14, seeding shall be vegetated with the final revegetation seed mixture. Refer to the Landscape Plan. The cover crop will act as a "green manure" soil amendment once the topsoil is replaced.
   c) Implement appropriate stockpile weed control strategies.
   d) Erosion control matting or geotextiles can be used to temporarily protect stockpiles, not plastic.
   e) Use erosion protection measures to prevent stockpiled topsoil from leaving the stockpile area.
   f) Stockpile area shall be outside the floodplain.
6) Placement
   a) Install stockpiled topsoil on top of rough subgrade to achieve finished grades, reestablishing a natural, healthy soil profile.

b) Transitioning between the subsoil and salvaged topsoil can be accomplished by applying two to three inches of topsoil, tilling it into the underlying soil, and then applying the remaining soil on top.
c) Placement of salvaged topsoil in the channel shall follow details and sections for channel work provided in the plans (Sheets 24 and 26).

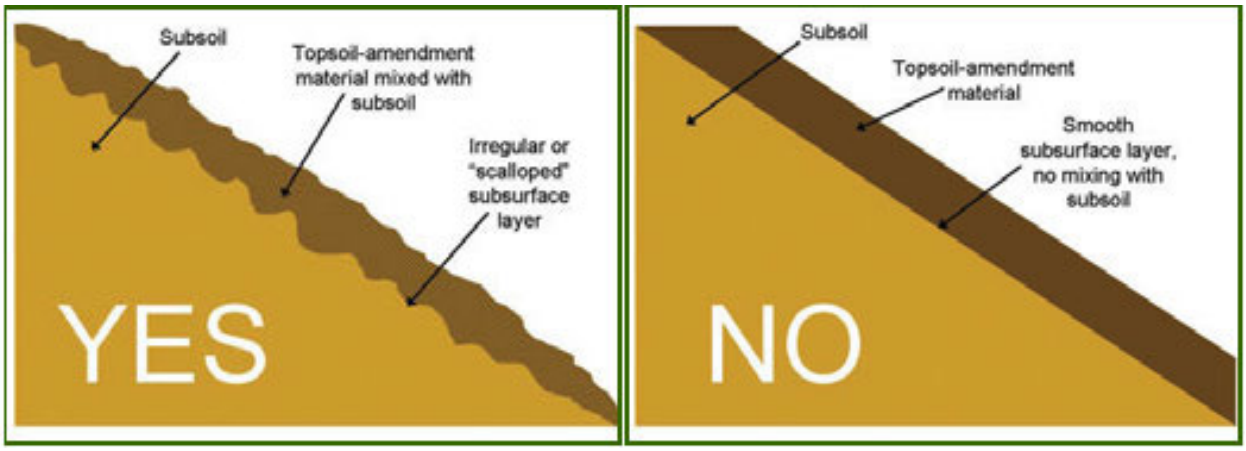


Figure 1 Topsoil amendment applied and mixed with subsoil, creating a scalloped subsurface layer (left). Typical topsoil amendment application without mixing with subsoil (right). Source: Watershed Management Guidebook (Drake & Hogan, 2013).[1]

To prevent the compaction of salvaged topsoil, the Contractor shall properly sequence all construction activities, including landscape and irrigation installation, before soil placement. The following activities, among others, shall occur before placing salvaged topsoil:

- Excavation of all tree pits;
- Installation of trees and shrubs larger the 5-gallon size;
- Trenching and installation of subsurface irrigation components;
- Avoid travel across areas of placed topsoil or minimize the number of travel routes, to the extent possible. Heavy vehicles shall not be permitted in these areas.

601S.6 Measurement and Payment

ADD the following to the end of the section:

For the Stream Restoration Area, Salvage and Place is paid for at the contract bid price per cubic yard. Payment includes all labor, materials (including compost for Streambank soils only), and equipment necessary to complete this bid item including salvaging, special handling, stockpiling, storage, re-handling of material, and placement.

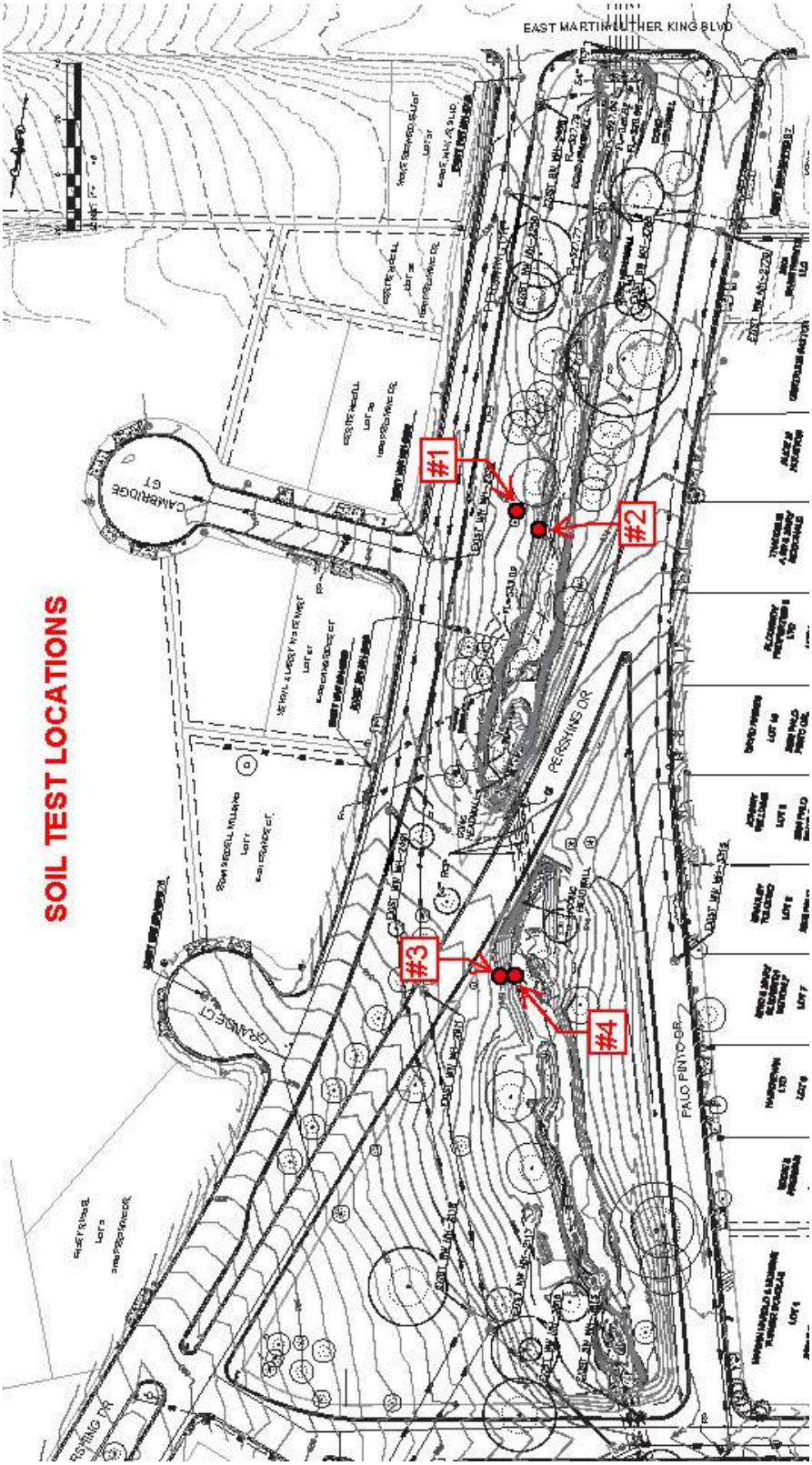
Salvaged soil for the Park Trail is part of work done for the trail (reference SP1301S) and shall not be paid for as part of this specification.

[1] Drake, K., & Hogan, M. (2013). *Watershed Management Guidebook.* An Integrated Environmental Restoration Services, Inc. Publication.

Pay Item SP 601S-A Salvage and Place Topsoil: Streambank, per Cubic Yard.
Pay Item SP 601S-B Salvage and Place Topsoil: Channel Bottom, per Cubic Yard.

End

ATTACHMENT A – SOIL ANALYSIS TEST LOCATIONS AND REPORT



SOIL ANALYSIS

NUTRIENTS AVAILABLE TO PLANTS

(Determined by Carbon Dioxide (CO_2) Natural Extraction Method)

TEXAS PLANT & SOIL LAB

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Name: CITY OF AUSTIN WATERSHED DEPT
SUSAN KENZLE
Field: JJ SEABROOK - 42 ACRES
Crop: NATIVE GRASSES, WILDFLOWERS, WOODY & STREAMSIDE VEG.
Date: 04/18/2013 **Lab #**: 15740-43

Low
Marginal
Adequate
High

Carbon Dioxide (CO_2) Mimics plant roots natural extraction

SEE REVERSE SIDE FOR RATING GUIDE

	Field	Text.	% OM Humus	CO_2	pH Std Unit	Salts E.C. mmhos/cm	Nitrate NO_3 lbs/ac	Phosphate P_2O_5 lbs/ac	* SALT CATIONS - PPM Potassium K H_2O	Potassium K CO_2	Sodium Na H_2O	Sodium Na CO_2	Calcium Ca H_2O	Calcium Ca CO_2	Magnesium Mg H_2O	Magnesium Mg CO_2	Ratios Na:Ca	Ratios Na:Mg
1	DwnStrm Upper	5-	0.95	VH+	7.6	0.64	10	10	24	70	10	77	121	1289	6	59	1	13
2	DwnStrm Lower	5-	1.10	VH	7.6	0.62	14	12	27	75	12	75	93	1157	6	63	1	13
3	UpStrm Lower	4-	1.95	EH	7.7	0.66	10	10	16	39	19	75	116	1217	8	80	1	9
4	UpStrm Upper	5+	1.95	VH	7.7	0.67	23	22	37	100	11	72	115	1332	8	79	1	9
	Optimal-General		2.8-4.8		6.3-6.8	0.18-1.00	35-90	50-100	75-100	80-125	< 100	< 175	60-120	300-800	13-20	60-100	1-4	5-9

Plant Removal Rates		Total Nutrient Plant Uptake (Lbs/Ac)				FERTILIZER GUIDELINES IN Lbs/Ac Recommendation - For MEY§						
Plant/Crop	Yield	N	P_2O_5	K_2O	Mg	Gypsum	Lime	Sulfur	N	P_2O_5	K_2O	Mg
Native Grasses	3 Tons	150	50	120	25			80-3X	126	50	90	7
Native Grasses	3 Tons	150	50	120	25			80-3X	119	48	84	5
Native Grasses	3 Tons	150	50	120	25			80-3X	105	50	127	
Native Grasses	3 Tons	150	50	120	25			80-3X	98	38	0	

* **SALT CATIONS**: H_2O = Immediately Available (Water Soluble Extract) ; CO_2 = Available Reserve (Carbonic Acid Extract). [Plants' roots give off CO_2] - CO2 Natural Extraction calibrates well to plant uptake (availability). These values are the nutrients available in the sample analyzed in our lab. **IS THIS A COMPOSITE SAMPLE, representative of your plants' major root zone?** Availability ratings (see reverse) have been calibrated by mutiple plant analysis (crop logging) during a growing season. Calibrated by numerous crops on hundreds of fields covering thousands of acres both domestic and foreign. By comparison, stronger extraction methods did not calibrate, especially on the major nutrients (P-K-Ca-Mg). TPSL is guided by ***ASK THE PLANT*** ® with precision sampling and lab methods. TPSL leads the field in applying sound scientific research principals on an applied practical & profitable basis. R-2011-09

Fertilizer Recommendations (N-P-K) are adjusted to reflect efficiency of recovery by plant and Estimated Nitrogen Release from Organic Matter. ENR estimates a 60% mineralization with optimum microbial activity, moisture and temperature **§ MEY = Maximum Economic Yields**

These fertilizer guidelines are ANNUAL RATES to be applied in multiple split applications over the entire growing season.

MICRONUTRIENTS

DTPA Extraction

* or Equivalent

	FIELD	PARTS PER MILLION ZINC Zn	IRON Fe	MANGANESE Mn	COPPER Cu				SOLVITA C-CO_2	FERTILIZER GUIDELINES IN Lbs/Ac Recommendation - For MEY $ZnSO_4$*	$FeSO_4$*	$MnSO_4$*	$CuSO_4$	B
1	DwnStrm Upper	1.15 M	10.45 M	3.51 L	0.48 L				36.41 M	5-10	5-10	10-15	10-15	
2	DwnStrm Lower	2.33 M	13.73 H	3.65 L	0.67 L					5-10		10-15	10-15	
3	UpStrm Lower	7.39 VH	34.38 EH	9.7 M	1.85 H							5-10		
4	UpStrm Upper	2.09 M	6.33 M	2.2 L	0.57 L					5-10	5-10	10-15	10-15	
	Optimal	3.00-6.00	11.00-21.00	10.00-20.00	1.20-2.40				> 60					

VL - Very Low; L - Low; M - Medium; H - High; VH - Very High; EH - Extremely High

TPSL® uses standard DTPA strong extraction chemical as used by most labs. This method is not calibrated by plant uptake as are TPSL ® natural extraction methods used for major nutrients.
♣ Recommended rate is for sulfate sources. Other sources may be more effective (Chelated). Consult manufacturers for equivalent amounts of more effective products. ***ASK THE PLANT®*** *can determine actual plant uptake of these nutrients .*

SOIL ANALYSIS REPORT

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SOIL-WATER-PLANT ANALYSIS & AGRICULTURAL CONSULTING

Name: CITY OF AUSTIN WATERSHED DEPT
SUSAN KENZLE
Field: JJ SEABROOK - 42 ACRES
Crop: NATIVE GRASSES, WILDFLOWERS, WOODY & STREAMSIDE VEG.
Date: 04/18/2013 **Lab #**: 15740-41

	Field	MEHLICH-III (EXCHANGEABLE) Phosphorous P by ICP ppm	Rate	Potassium K ppm	Rate	Magnesium Mg ppm	Rate	Calcium Ca ppm	Rate	Sodium Na ppm	Rate	CATION EXCHANGE CAPACITY C.E.C meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% Na	% H
1	DwnStrm Upper	85.28	VH	237.40	VH	166.90	H	6896.70	VH	66.00	L	36.77	1.66	3.78	93.78	0.78	
2	DwnStrm Lower	98.97	VH	208.00	VH	149.10	H	6810.60	VH	63.00	L	36.10	1.48	3.44	94.32	0.76	

IS THIS A COMPOSITE SAMPLE, representative of your plants major root zone ?

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Susan Kenzle
City of Austin Watershed Protection
JJ Seabrook

4/18/2013
Lab# 15740 - 15743

Soil Analysis

Texture by Bouyoucous

Sample ID	Lab #	Percentage (%) Sand	Clay	Silt	Texture	Class
Downstream Upper	15740	50	31	19	Sandy Clay Loam	I I I
Downstream Lower	15741	56	25	19	Sandy Clay Loam	I I I
Upstream Lower	15742	57	27	16	Sandy Clay Loam	I I I
Upstream Upper	15743	42	35	23	Sandy Clay Loam	I I I

TEXAS PLANT & SOIL LAB

5115 WEST MONTE CRISTO ROAD
EDINBURG, TEXAS 78541-8852

SOIL ANALYSIS REPORT

(We may endorse products that we know can be effective - We identify needs with recommendations)

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FAX (956) 383-0730
www.TexasPlantAndSoilLab.com

CITY OF AUSTIN WATERSHED DEPT **JJ SEABROOK / 42 ACRES** **04/18/2013**
SUSAN KENZLE **#15740-43**

RECOMMENDATIONS: *assume this soil sample is REPRESENTATIVE of the soil in the ROOT ZONE from the MAJORITY of the area tested. Rates are for MAXIMUM ECONOMIC YIELDS using all BEST MANAGEMENT PRACTICES. ADJUST for your field conditions & yield goal* by **CONFERRING with your Consultant and/or Local Supplier for products that can supply these generic recommendations for your plants & soils needs,** as we have no knowledge of products or suppliers available in your area.

FERTILIZER GUIDELINES

Crop:	NATIVES	Yield Goal:	MAX	Rec Units:	LBS/AC

Gypsum	Lime	N	P_2O_5	K_2O	Mg	S	Zn	Fe	Mn	Cu	B
		49-126	38-50	0-127	0-7	80	0-10	0-10	5-15	0-15	

***Interpretations and Recommendations*:**

ORGANIC MATTER the available humus fraction (slow release nitrogen) is the foundation of any soil fertility or plant nutrition program. Our tests measure only the humic (well decomposed - available) portion. To build O.M. is a long-term process. Use manure, composts, humates and other humus products for fast results in the soil-building program. Supplemental products such as Organic Formulas, humic/lignin products, soil inoculants, compost teas, fish products, vegetable meals, etc should also be beneficial.

- Build and maintain humus (slo-release N supply) with composts, humates, humus products, vegetable meals, fish products and/or soil inoculants for better tilth and nutrient supply. – (Granular Humates can be blended with dry fertilizer and there is an activated humate for faster release.)

NITROGEN: Native Grasses: Apply 98 to 126 lbs/ac of actual N in split applications

Native Flowers & Shrubs: Apply 50% less N than grasses

PHOSPHATE and Micronutrients tie up rapidly in highly calcareous soils.

Apply 38 to 50 lbs/ac of P_2O_5 in split applications

SULFUR, placed in a band with the PHOSPHATE in alkaline soils, can increase the availability to and uptake of P by the roots. Any amount of S can be beneficial and there may be increasing benefits above the 1:1 S: P Ratio.

Humic Substances such as Humic acid with the P can increase uptake, Soil inoculants (conditioners) might also be beneficial.

Soil Inoculants (of naturally occurring beneficial soil microorganisms) may aid the uptake of plant nutrients.

POTASH: Apply as much K_2O as N as many crops including grasses use more K_2O than N and will mine the subsoils, then yields and quality decline.

Apply 0 to 127 lbs/ac of K_2O

CITY OF AUSTIN WATERSHED DEPT **JJ SEABROOK / 42 ACRES** **04/18/2013**
SUSAN KENZLE **#15740-43**

Use K-Mag (0-0-22/11 Mg/22 S) as a source of Magneisum

ZINC: Use 0-10 lb/ac of Zinc Sulfate or equivalent (complexed/chelated).

IRON: Apply 0-10 lb/ac of Iron Sulfate or equivalent (complexed/chelated).

MANGANESE: Apply 0-15 lb/ac of Manganese Sulfate or equivalent (complexed/chelated).

COPPER may be applied to the soil as equivalent (complexed/chelated) of Copper Sulfate, 10-15 lbs/ac.

SULFUR use up to 80 lb/ac (2 lbs/1000 sq. ft. of area) it is best when used 2 or 3 times a year. (S effect lasts only 45-90 days in most cases.)

Sulfur improves the physical condition (tilth) of the soil for better water and root penetration and increase nutrient availability. Sulfur activates Ca & Mg by solubilizing them to the available water (H_2O) soluble form. Soluble Ca helps sodium to leach. S can also release P & Micronutrients.

SOIL INOCULANTS-Activators (in the absence of adequate soil humus or in sterile conditions) of SOIL INOCULANTS / COMPOST TEAS containing naturally occurring beneficial soil micro-organisms and/or enzymes, hormones, polymers, wetting agents and Carboxyls may improve nutrient uptake and the soil's physical condition (tilth) for better plant performance, possibly disease resistance and salt leaching. Feeding microbes with humic substances, carbohydrates, and other organic materials aid soil tilth and releases soil nutrients while helping some bacteria fix atmospheric N. [A combination of products may be best --Follow product labels on your own test plots for the most effective products.]

Soil microbes need food (humates/humus etc.) and energy (sugars and/or proteins) molasses or fish products among many.

CALLS are welcomed for clarification of LAB Reports. However, when due to numerous and lengthy matters over 10-15 minutes, we must charge our clients a consulting fee of $80/hr in 30 minute increments. Without lab work the fee is $120/hr. This is based on an honor system. ***Please track your time in 30 minute increments and send check payable to Texas Plant & Soil Lab***. As with CPAs, lawyers, Dr.s and other professionals TPSL is not subsidized by sales or public funds so our time must produce income so we can keep current in soil fertility and plant nutrition to aid our clients' return on Investments in inputs which produce Maximum Economic Yields and Quality.

INTERPRETATIONS **TESTS SHOW AVAILABLE NUTRIENTS - RATINGS CALIBRATED BY PLANT ANALYSIS, see guide sheet.**

Soil Status – Four, Standard topsoil analysis with micronutrients plus Solvita – for native grasses, flowers and shrubs

Textures – #1, 2, 3 Tests medium, with fair internal drainage, water holding and cation exchange capacity of about (15-25). #4 Tests medium heavy with slow internal drainage, high water holding & high cation exchange capacity of about (20-35).

Total Soluble Salts – (TSS) – (*can cause a major tilth problem, usually Sodium (Na) is the major culprit of the toxic big 3 (Na, NO_3 & K). Is the Na soluble? Is it attached to the soil particle? Sodium must be solubilized so it can leach through the soil profile with good internal drainage (tilth). This requires adequate soluble Ca for a low Na/Ca ratio.*) – ALL Tests in desirable low range --- check extractable (CO_2) Sodium levels, as they could be high even though soluble has leached.

Sodium (Na) – (*high Na can interfere with nutrient uptake and should be managed for leaching*) – ALL Tests favorably low.

Calcium (Ca) – (*adequate soluble (H_2O) Ca is needed for available nutrients and good soil physical condition*) – ALL Tests very high Calcium, which rapidly ties up P and micronutrients. Use Sulfur (in a band) with Phosphate and in irrigation water if possible. Soluble Calcium (available H_2O Ca) is in favorable range.

Magnesium (Mg) – (*vital as nucleus of the chlorophyll formation site for photosynthesis and essential starches and sugars production. It must be available (as H_2O/Mg) to obtain a Na/Mg Ratio below 10 (for sugar crops).*) – #1 Levels are low - more should be beneficial. #2 and 4 Levels are marginally low - more should be beneficial. #3 Levels test medium, should be adequate, use plant analysis to be sure.

CITY OF AUSTIN WATERSHED DEPT **JJ SEABROOK / 42 ACRES** **04/18/2013**
SUSAN KENZLE **#15740-43**

Organic Matter – (O.M.) – *(Humus fraction - slow release N at reasonably good levels is the foundation of any good soil fertility - plant nutrition program. This test determines only the Humic (well- decomposed and available) portion.)* – #1 and 2 tests very low - needs improving for better tilth (soil condition/structure) and nutrient uptake. #3 and 4 tests favorable low medium - continue to build for best results and better tilth (condition). - Build and maintain humus (slo-release N supply) with composts, humates, humus products, vegetable meals, fish products and/or soil inoculants for better tilth and nutrient supply. – (Granular Humates can be blended with dry fertilizer and there is an activated humate for faster release.)

pH – *(pH should not be used as an absolute recommendation as it is a very nebulous dynamic measurement at best---too many factors influence a soil test pH measurement for it to be a reliable representation of the natural soil pH in the field that affects plant root growth. TPSL® measures and evaluates Ca levels four different ways.)* – ALL Tests alkaline. Use Sulfur when needed to maintain good soluble Ca/Mg levels for good physical condition for water and root penetration.

Nitrogen (N) – (as Nitrate - NO_3) – *(the most essential nutrient. Too much too early can be as harmful as too little too late. Feed plants as they show need – TPSL®'s exclusive **Ask the Plant ®** program allows nutritional corrections to be dynamically made as the plants' needs change to achieve maximum genetic potential.)* – #1, 2, 3 Some residual - but test is low --- needs more readily available N. #4 Tests upper low range - shows some residual, more should be needed soon

Phosphorus (P) - (as Phosphate – (Phosphorus Pentoxide) – P_2O_5) – *(along with Ca, it is the backbone of all plants and animals. It is especially important at germination and root formation as P in the sap of plants indicates root activity for future growth and production)* – #1 and 3 tests very low - shows little or no residual, need to build reserves. #2 tests low - shows a slight residual, need to build reserves. #4 tests upper low range - shows some residual, more should be needed soon.

Potassium (K) – (as Potash – K_2O) – *(the quality element of cell walls for cold and drought tolerance and vital enzyme functions.)* – #3 tests very low availability - needs good rates - most plants use as much K_2O as N and feed on the subsoil. #1 and 2 tests low reserve availability - more should be beneficial. Test the subsoils. #4 tests high medium should be adequate, only Plant Analysis can tell for sure with high K requiring crops and/or high soil sodium.

Micronutrients – varies from low to extremely high – refer to soil analysis for details

Solvita Soil Respiration Test (CO_2-C Burst) – The Solvita Soil Respiration Test (CO_2-C Burst) determines the aspect of soil quality relating to overall soil biology (microbial biomass) and carbon content. As soil respiration improves with healthy crop rotations, proper tillage (no-till to minimum-till) and adequate organic matter (compost and/or cover crops) additions, the Solvita response may go from an inactive condition (< 5 CO_2-C ppm) to a very active state of around (61 – 100 CO_2-C ppm). In some unusual cases, heavily manured or organic soils can attain a very high rate of biological activity (> 100 CO_2-C ppm), which may be considered excessive. Your soil quality (microbial biomass) is approaching or declining from an ideal state of soil respiration. Soil may provide adequate N-mineralization for light feeders and requires crop rotations and some maintenance applications of microbially active organic matter. Maintain with the use of cover crops, compost, compost teas, soil inoculants (beneficial soil microbes), humates/ humic acid, molasses, fish, etc.

Respectfully Submitted
Noel Garcia, CCA
Certified Crop Adviser

SPECIAL PROVISION To
Standard Specification Item No. 602S (Version 06-16-08)
Sodding for Erosion Control

For this project Item 602S Sodding for Erosion Control City of the City of Austin Standard Technical Specification is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

602.2 Submittals

DELETE the existing paragraph in its entirety and replace with the following:

The submittal requirements for this specification item shall include the identification of the type and source of sodding and type and rate of application of fertilizer and soil amendment, including the following:

1) Required Submittals Before Construction:
   a) Source of sod and certification of varieties.
   b) Installation and maintenance requirements as provided by supplying sod farm.
   c) Sample of sod staple proposed for use.

2) Before Final Completion:
   a) Schedule an inspection with the owner to assess the condition of turf areas and the need for any additional maintenance measures.

602.3 Materials

A. Block and Mulch Sod

ADD the following paragraphs to the end of the section:

a. Sod in the Stream Restoration area shall be 'Eco' hybrid buffalo grass sod or approved equal.
b. Sod in/adjacent to the Rain Gardens, in the swale beside the Urban Trail, or other designated location outside the Stream Restoration area shall be 'Tifway 419' Bermuda Grass or approved equal.

ADD the following items under Materials:

F. Topsoil

Topsoil shall meet Standard Specification 601S, SP601S, and SS612, and be salvaged and/or placed per the Topsoil Treatment plans.

G. Landscape Stakes

Biodegradable landscape stakes (6"), such as GreenStake® or similar, shall be used to anchor sod in areas where slopes are 3:1 or greater.

DELETE the following items in their entirety:

C. Mulch

E. Tacking Agent

602.5 Construction Methods

A. General

ADD the following paragraphs to the end of the section:

Except for approved compost, fertilizer nutrients shall not be applied and tilled to areas in the Stream Restoration or Rain Gardens.

a. For Stream Restoration areas, topsoil shall be installed as follows:
   1. Any compacted soil resulting from construction activities shall be scarified to a depth of 5-6".
   2. After scarification, add 6" of stockpiled streambank salvaged topsoil. Smooth the planting area, removing all rocks, clumps and debris over one (1) inch.

b. For all other areas, topsoil installation shall be as follows:
   1. Area shall be fine graded, with no rocks or earthen clods over three (3) inches, or visible debris.
   2. Six inches of imported topsoil, meeting the requirements of SS612, shall be used.
   3. The topsoil shall be installed to a depth of six inches, to be level with the surrounding ground allowing for settling.

B. Placement

DELETE the entire second paragraph and replace with the following:

a. Any sod used in areas subject to concentrated water flow, regardless of slope, shall be staked with biodegradable landscape stakes installed per manufacturer's specification. Sod on all slopes exceeding 3:1 shall be staked.
b. Roll prepared planting bed with hand roller to approximately 80% compaction before placement of sod.
c. All sod shall be installed the day it is delivered.

C. Watering

DELETE the first paragraph and replace with the following:

Immediately after the area is sodded, it shall be watered with the minimum amount of water appropriate for the type of sod installed, with the goal of encouraging deep root growth. Irrigation shall continue until the sod is established and as required during times of drought to ensure survival. Before landscape installation commences, Contractor

shall provide Owner with a seasonal irrigation schedule for the entire project based on either current/real time evapotranspiration (ET) or monthly historical reference ET data, monthly effective rainfall estimates, plant landscape coefficient factors, and site factors.

ADD the following sentence to the second paragraph:

Contractor shall secure any required watering variances from Austin Water Utility before irrigation commences.

ADD the following section:

E. Turf Establishment

The Contractor is responsible for all required maintenance operations on the turf, including mowing, edging, weed control, insect control, disease control, animal control, irrigation maintenance, irrigation equipment replacement, litter pick-up and sod replacement if required. Failure to follow the sod supplier's guidelines for sod maintenance will trigger sod replacement, if sod weakens as a result. Note especially mowing height, irrigation requirements, fertilizer requirements, and mowing frequency. Fertilizer is not required in the Stream Restoration Area.
If an herbicide is necessary to remove stubborn weeds, a non-selective herbicide containing glyphosate (e.g. Roundup) shall be used (or approved equal). In the Stream Restoration area, use herbicides labeled safe for aquatic use only.
Monitor the site at each maintenance visit for fire ant activity. Pest management materials shall include the use of bait formulated to eliminate the entire colony (including the queen). Refer to City of Austin Grow Green standards for examples of acceptable fire ant bait products. Integrated Pest Management (IPM) protocols established by the City of Austin are required for Innovative Water Quality controls such as rain gardens.

City of Austin Grow Green standards and recommendations shall be followed for all planting, maintenance and establishment practices throughout the contract.

602.6 Block Sodding

DELETE the fifth sentence in its entirety and replace with the following:

Each piece of sod should be pegged/staked at the ends of the strips and in the center, or every 3-4 feet if he sod strips are long with "biodegradable landscape stakes" driven through the sod blocks into firm earth sufficiently close to hold the block sod firmly in place.

602.7 Mulch Sodding

DELETE this section in its entirety.

602.9 Payment

DELETE this section in its entirety and replace with the following:

Sod will be paid for at the unit bid price per square yard installed, including all appurtenances necessary to provide the OWNER with fully installed sod, complete in place.

Pay Item SP 602S-A: Block Sodding 'Tifway 419' Bermuda grass, 100% coverage, plan quantity, Per Square Yard.
Pay Item SP 602S-B: Block Sodding 'Eco' Buffalo grass with Blue Grama overseed, 100% coverage, plan quantity, Per Square Yard.

End

SPECIAL PROVISION To
Standard Specification Item 604S (Version 08-18-10)
Seeding for Erosion Control

For this project 604S Seeding for Erosion Control of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

604S.2 Submittals

A.
ADD the following sentence:

Provide delivery tickets indicating the quantity of each type of seed delivered to the site.

B.
ADD the following sentence:
Submit an invoice showing certification of Hydromulch/seed mix as Bonded Fiber Matrix (BFM) or Fiber Reinforced Matrix (FRM).

ADD the following items:
E. List of types of seeding equipment proposed for use.
F. Hydromulch log (see Attachment A).

604S.3 Materials

C. Top Soil.
ADD the following to the end of the sentence:

SP601S, and/or Special Specification 612, Topsoil Mix, as directed by the Landscape Architect.

ADD the following item:

I. **Hydromulch**. Hydromulch for permanent vegetative stabilization materials may include:
   a. Bonded Fiber Matrix (BFM): organic defibrated fibers and cross-linked hydro-colloidal tackifiers. Refer to ECM Table 1.4.7-C
   b. Fiber Reinforced Matrix (FRM): organic defibrated fibers produced from grinding clean, whole wood chips, crimped interlocking fibers, cross-linked insoluble hydro-colloidal tackifiers and reinforced natural and/or synthetic fibers.

604S.4 Construction Methods

ADD the following sections:

C. Seeding.

Apply seed uniformly with a seed spreader, drill, cultipacker seeder or hydroseeder.

D. Protection of Seed Bed with Hydromulch or Soil Retention Blanket.

Newly-installed seeding for permanent re-vegetation must be protected by Hydromulch or soil retention blanket (refer to Standard Specification 605S Soil Retention Blanket) immediately after seeding.

1. Hydromulch
Permanent vegetative stabilization with Hydromulch shall comply with the requirements of ECM Table 1.4.7-C using either:

(a) Bonded Fiber Matrix (BFM): 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties), or
(b) Fiber Reinforced Matrix (FRM): 65% organic defibrated fibers, 25% reinforcing fibers or less, and 10% tackifier (Refer to ECM Table 1.4.7-E for FRM properties).

604S.5 Non-Native Seeding

A. Method A. Broadcast Seeding.

ADD the following sentence at the end of the 1st paragraph:

Apply seed uniformly at the specified rate with a seed spreader, drill, cultipacker seeder or hydroseeder.

Seed Mixture and Rate of Application for Broadcast Seeding:

DELETE the two paragraphs in their entirety and replace with the following:

From September 15 to March 1 seeding shall be with a cool season cover crop (see Table 4) at a rate of 1.5 pounds per 1000 square feet (0.75 kilograms per 100 square meters). Cool season cover crops are not permanent erosion control. The cool season cover crops shall be mowed (scalped) as short as possible to suppress growth. Rake and remove excess thatch as required. For Steam Restoration Area, install native seed mix (see SP609S for mix) directly into remaining cover crop stubble. For areas receiving Bermuda Grass seed, the area shall be re-seeded in accordance with the seeding rate for March 1 to September 15, below.

From March 1 to September 15, seeding shall be with hulled Bermuda Grass at a rate of 1 pounds per 1000 square feet with a PLS = 0.83 and purity of 95%. Bermuda Grass seed shall only be planted where shown on the Drawings.

B. Method B - Hydraulic Planting.

ADD the following sentence at the end of the first paragraph:

For native seed applications, the Contractor shall rinse the hydroseed slurry tank with water three times to insure that no seed contamination occurs to the specified seed mixes.

DELETE the Table for Fiber Mulch and Soil Tackifier and replace with the following:

March 1 to September 15

For permanent vegetation, newly-installed seeding must be protected by hydromulch or soil retention blanket (refer to Standard Specification 605S Soil Retention Blanket) immediately after seeding. Protection of the seed bed shall occur in a manner that will allow seed germination and that encourage effective vegetative growth. Hydromulching shall comply with requirements of City of Austin, Environmental Criteria Manual (ECM) Section 1.4.0.

1. Hydromulch
Permanent vegetative stabilization with Hydromulch shall comply with the requirements of ECM Table 1.4.7-C using either:

(a) Bonded Fiber Matrix (BFM): 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties), or
(b) Fiber Reinforced Matrix (FRM): 65% organic defibrated fibers, 25% reinforcing fibers or less, and 10% tackifier (Refer to ECM Table 1.4.7-E for FRM properties).

604S.6 Native Grass Seeding

ADD the following to the end of the section:

Refer to project documents for complete plant list and planting plan. Refer to SP609S Special Provision for specifics on native seeding for this project.

604S.7 Mulch

ADD the following items:

E. Bonded Fiber Matrix (BFM).
BFM shall be 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties). It shall be spread uniformly over the area indicated in the Plans, to the manufacturer's recommended application rate and coverage.

F. Fiber Reinforced Matrix (FRM).
FRM shall be 65% organic defibrated fibers, 25% reinforcing fibers or less, and 10% tackifier (Refer to ECM Table 1.4.7-E for FRM properties). It shall be spread uniformly over the area indicated in the Plans, to the manufacturer's recommended application rate and coverage.

604S.9 Payment

ADD the following pay items:

Pay Item No. SP 604S-A1: Non-Native Seeding for Erosion Control Method, Seed Spreader, Per Square Yard.

Pay Item No. SP 604S-A2: Non-Native Seeding for Erosion Control Method, Drill Seed or Cultipacker, Per Square Yard.
Pay Item No. SP 604S-A3: Non-Native Seeding for Erosion Control Method, Bonded Fiber Matrix Hydromulch or Fiber Reinforced Matrix, Per Square Yard.

DELETE the following pay items:

Pay Item No. 604S-C: Native Seeding for Erosion Control Method, Mulch Per Square Yard.
Pay Item No. 604S-D: Native Seeding for Erosion Control Method, Mulch Per Square Yard.
Pay Item No. 604S-E: Mulch, Per Square Yard.
Pay Item No. 604S-F: Mulch, Per Acre.

Maintenance is subsidiary to 608S and SP608S. Irrigation is subsidiary to SS603.

End

Appendix A
HYDROMULCH LOG

Page No._____of_____

Project Name:_____

ID NO. (CIP, SP, etc.):_____

Date	Time	Start STA	End STA	Bottom Elev.	Top Elev.	~ Sq. Ft.	Hydromulch Type and Qty (lbs.)	Seed Mix Applied	Seed Qty (lbs.)	Fertilizer Added (Yes or No; Type; Amt)	Notes (weather, conditions, etc.)

SPECIAL PROVISION TO
Standard Specification Item No. 605S, Soil Retention Blanket (Version: 6/21/2007)

For this project Item No. 605S Soil Retention Blanket of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

605S.2 Submittals

Add to the end of Section:

Submittal shall also include physical properties and performance data.

605S.3 Materials

Delete Section A and B in their entirety and **replace** with the following:

A. Soil Retention Blankets

All soil retention blankets must be listed on TxDOT Approved Products List or approved by the Engineer or designated representative.

The soil retention blanket shall be one (1) of the following classes and types, as shown in the Drawings:

1. Class 1. "Slope Protection"

    a. Type A. Slopes 1:3 or flatter - Clay soils.

    b. Type B. Slopes 1:3 or flatter - Sandy soils

    c. Type C. Slopes steeper than 1:3 - Clay soils

    d. Type D. Slopes steeper than 1:3 - Sandy soils

2. Class 2. "Flexible Channel Liner"

    a. Type E. Short-term duration (Up to 2 years); Shear Stress Range 0 – 2 pounds per square foot [psf] (0 – 96 Pascal)

    b. Type F. Short-term duration (Up to 2 years); Shear Stress Range 2 – 4 pounds per square foot (96 to 192 Pascal). The specific Type F blanket installed shall be the following:

        (1) Channel and Riparian Restoration area (see Drawings): North American Green BioNet C125BN, or approved equal. Alternate shall possess the

following minimum properties: 100% coconut (coir) fibers; 100% biodegradable jute fiber (top and bottom netting); biodegradable, organic stitching; unit weight = 9.79 oz/sy; thickness = 0.23 in; permissible shear stress = 2.35 psf; permissible velocity = 10 ft/s; tensile strength (MD) = 206.4 lbs/ft; tensile strength (TD) = 145.2 lbs/ft; light penetration = 16.2% open, nominal longevity = 24 months.

(2) Storm Outfall Retrofit C Swale area (see Drawings): Nedia Enterprises KoirMat 700, or approved equal. Alternate shall possess the following minimum properties: 100% coconut (coir) fibers; 100% biodegradable; woven matting possessing 50% open area; unit weight = 20.6 oz/sy; thickness = 0.35 in; permissible shear stress = 4.5 psf; permissible velocity = 12 ft/s; tensile strength (wet MD) = 924 lb/ft; tensile strength (wet CD) = 684 lb/ft; 50% open area; nominal longevity = 24 months.

c. Type G. Long-term duration (Longer than 2 years); Shear Stress Range 4 – 6 pounds per square foot (>192 to <287 Pascal).

d. Type H. Long-term duration (Longer than 2 years); Shear Stress Range 6 – 8 pounds per square foot (>287 to >383 Pascal).

B. Fasteners

The fasteners (type and spacing) shall conform to the recommendations of the manufacturer for the selected soil retention blanket, unless otherwise shown on the drawings.

End

SPECIAL PROVISION To
Standard Specification Item 608S (Version 12/26/2012)
Planting

For this project 608S Planting of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

608S.1 Description

ADD the following after the first paragraph:

The warranty period for plant materials extends for one year from the date of substantial completion.

Standard Specification 608S and its standard provisions address maintenance to be performed to all planting areas during “Interim Maintenance” that begins at the notice to proceed and ends with substantial completion. Special Specification 611 covers “Extended Maintenance” that begins at substantial completion and covers a three- to five-year period depending on specific area within the project as defined in SS611.

608S.2 Submittals

ADD the following item at the beginning of this section:

AT TIME OF BID

Qualifications of the Restoration Contractor

The Restoration Contractor will be responsible for implementation of onsite riparian restoration, including site preparation, plant installation (including seeding) and replacement, soil amendments, weed management, and temporary irrigation. The Contractor shall supply all materials, equipment, and labor required for the restoration work.

The Restoration Contractor must demonstrate a record of successfully completed restoration projects. The Contractor shall have and demonstrate a minimum of five years related experience, including at least one job in the last five years successfully performing work of a similar size, nature, and cost in urban riparian restoration. Comprehension of the ecology of native and exotic species of Central Texas is essential.

Required Contractor Submittals at time of bid:
A company desiring to bid on this project shall submit their qualifications for consideration. The qualifications, at a minimum, must include information on each of the following criteria:

1. **General Information**
   a. Firm Name
   b. Address

c. Primary contact name, phone number, email address
d. Website address
e. Number of years in business
f. Location of business
g. Contractor licensure(s), insurance, bonding
h. Number and type of professional and corresponding registrations/certifications
i. List of projects for which the firm is currently committed or is expected to be committed in 2014, including name and location of project, time frame to complete project, and contracted value of project.

2. Staffing and Equipment

a. Provide a list of the contractor's key personnel that will be involved in this restoration project, including project managers and superintendents. Provide resumes of the key personnel outlining specific duties and responsibilities performed on restoration work.
b. Provide a list of equipment the contactor has available for this project.
c. Provide a description of the percentage and elements of work that would be subcontracted.

3. Project Experience

a. Demonstrate past experience of the Contractor in restoration work completed for a stream restoration project. Provide a list of projects meeting this criterion, including:
i. Project description of each similar project. Describe the project size (linear feet) and tasks completed including, but not limited to types and techniques of planting, invasive species management, erosion/sedimentation treatments (e.g., soil retention blanket, coir logs), and irrigation methods.
ii. Start and completion dates or anticipated completion dates.
iii. Project owner.
iv. Name and telephone number, email address of owner's representative.
v. Names of Contractor's key personnel involved in the restoration work.

ADD the following sentence before item A

These submittals are required before construction.

ADD the following after item **G**:

H. Provide evidence of the health of at least 10 trees planted 3 or more years ago on at least 3 different projects (include project name and address). Trees shall be of similar size, species, and conditions of the trees indicated on the Drawings.

I. Photographs of a representative sample of all plants shall be provided to Landscape Architect for approval at least seven days prior to requesting permission for delivery to the site. Photographs shall be taken at the nursery that will be supplying the plants for this project; shall be of the actual plants that will be supplied; and shall include scale figures for reference. The Landscape Architect may visit the nursery to approve and tag particular plants, as appropriate.

J. One gallon samples of proposed of mulch.

K. Copy of Licensed Pesticide Applicator's current Texas certificate.

L. Required Submittals before Completion of Planting:

a) Maintenance shall be provided by the Installing Contractor. Provide contact information for primary maintenance contact.
b) Schedule of visits and tasks for the Interim Maintenance Period.
c) Before plant installation, Contractor to submit copies of all invoices for each shipment of plant materials to the project site. Invoice shall include name (species, genus, cultivar and variety if applicable) and size of each type of plant material.

M. Required Submittals during the Interim Maintenance Period:

a) Monthly schedule of maintenance activities submitted to designated Owner's Representative, one week before the beginning of each month.
b) Documentation of maintenance visits and activities performed to designated Owner's Representative at the end of each month.
c) Pesticide tracking log per Attachment B in SS611 to be submitted monthly if pesticide applications occur during interim maintenance.

N. Required Inspections During Construction:

a) After rough grading is complete, before amended or salvaged topsoil as described in SP601S and SS612 is spread for fine grading. Notify Owner a minimum of 7 days in advance to schedule for inspection.
b) After fine grading is complete and all soil amendments have been added, before any plants are installed. Notify Owner a minimum of 7 days in advance to schedule for inspection.
c) Before plant installation, Contractor to schedule plant material inspection with Landscape Architect after delivery of materials to the site but before installation. Landscape architect to inspect a representative sample of plant materials in each area of the project (Stream Restoration, Rain Garden, Pershing Drive Urban Trail). All plants shall be labeled in a durable, legible manner with the plant name, with labels attached to all plants, bundles, and containers when delivered.

O. Required Inspections at end of Interim Maintenance Period (before Substantial Completion):

a) Inspection of all planting areas will be made by the Landscape Architect at the end of the Interim Maintenance Period. The Contractor shall schedule the inspection at least seven (7) working days in advance.

608S.3 General

B. License Requirements
3. Irrigation.

REVISE licensing entity as follows:

Texas Commission on Environmental Quality (TCEQ)

ADD the following before “maintained” in the second sentence:
Installed and

608S.4 Materials

E. Mulch

ADD the following after the first paragraph:

Contractor shall install hardwood mulch consisting primarily of organic material (shredded bark, stump grindings, composted bark) and produced from a 3 (three) inch minus screening process. The material shall be a well-graded mixture of particle sizes and must be free of refuse, ground construction debris, biosolids, and manure. It may be manufactured on or off the project site. Three inches of mulch should be installed and maintained in non-turf areas.

Gravel can be used for soil stabilization in rain gardens ONLY, however coarsely-shredded hardwood mulch is preferred. The gravel should be ¾”- to 1”-diameter washed, rounded river gravel. Crushed limestone and granite (i.e., “decomposed” granite) are not acceptable due to fines that cause clogging. Placement of gravel relative to plant materials should follow the guidelines for organic mulch.

F. Peat Moss

DELETE this item in its entirety.

G. Planting Soil Mixture

ADD the following after the first paragraph:

Except for Stream Restoration Area, planting soil mixture shall be imported topsoil as described in SS612. For turf and landscape areas, six (6) inches minimum of soil is required and 12 inches for tree planting.

H. Water

ADD the following after the first paragraph:

Refer to SS603 for specifics of the work of Temporary Landscape Irrigation. Payment for irrigation water during the Interim Maintenance shall be subsumed under Pay Item No. SP 608S-5, Management Practices.

J. Pesticides including Herbicides

ADD the following after the first paragraph:

All pesticide and herbicide use shall follow the IPM standards and protocols outlined in the City of Austin Grow Green website.

If chemical treatment is necessary to eradicate perennial weeds, a non-selective herbicide containing Glyphosate (e.g. Roundup) is preferred for herbaceous plants. For woody plants an herbicide with the appropriate formulation of the active ingredient Triclopyr is usually preferred. Sedges (e.g. nutsedge) may be managed with a product that selectively controls plants in the genus Cyperus (e.g. Sedgehammer, Manage, etc.)

The City's pre-approved primary herbicide ingredients are listed below. The Contractor's Licensed Pesticide Applicator shall not use an herbicide or pesticide whose primary ingredient is not on the following list without prior written consent.
(1) Imazamox,
(2) Glyphosate, and
(3) Triclopyr.
In riparian areas, use a surfactant-free glyphosate, labeled safe for aquatic use.

Organic herbicides, including acetic acid (20% vinegar) and essential oils are permitted in biofiltration ponds and rain gardens.

Herbicides should have a photosensitive dye that produces a contrasting color when sprayed on the ground. The color must disappear between two to three days after being applied. The dye must not stain surfaces, or injure plants or wildlife when applied at the manufacturer's recommended rate.

Fire ants frequently invade sites with disturbed soils. Pest management materials shall include the use of bait formulated to eliminate the entire colony, including the queen. Example of acceptable bait materials include:

(1)	Hydramethylnon	product names: Amdro®, Combat®
(2)	Spinosad	product name: Eliminator®
(3)	Methoprene	product name: Extinguish™
(4)	Abamectin	product name: Ascend™, Raid®
(5)	Pyriproxyfen	product name: Spectracide®

K. Stakes and Guys

ADD the following after the first paragraph:

Stakes shall be metal "T" or wood posts driven outside the rootball and connected to the tree with a web fabric tape (e.g., Arbor Tie). The tape should be tied to form a figure eight twist that is not tied to the trunk, just attached to the posts. The point of contact should be only about halfway up the trunk. All stakes and web tape shall be removed after one year.

P. Temporary Fence

Temporary fencing shall be used to delineate the Grow Zone. The fencing may comprise four-foot metal stakes or t-posts installed on 10 foot spacing with yellow twisted polypropylene rope, or approved equal, running between the posts. Coordinate location of fence with project Landscape Architect.

608S.5 Construction Methods

B. Excavation of Planting Pits

2. Pit Sizes (a)
DELETE the first sentence in its entirety and replace with the following:

The planting pit should be a minimum horizontal dimension of three (3) times the width of the rootball for the following plant specifications:

2. Pit Sizes (d)
DELETE the first sentence entirety and replace with the following:

Pits shall not be excavated deeper than the depth of the plant rootball.

ADD this sentence to the end of the paragraph:

Plants larger than 1 gallon size shall be placed on firm soil at the base of the planting pit.

ADD this paragraph to the end of the section:

In Stream Restoration Area there are numerous existing bald cypress trees under which no grading is proposed. The container grasses proposed for installation under these trees per the Landscape Plan shall be pit planted without removing existing vegetation. The Contractor shall use only small hand tools in these areas to minimize damage to roots of existing trees.

E. Pruning Roots

ADD these sentences to the end of the paragraph:

Root pruning shall be done at the time of planting to remove damaged or undesirable roots, i.e., those that will become a detriment to future growth of the root system.

For container plants that are mildly to moderately root bound, the Contractor shall “massage” the roots to loosen them from their compacted pot shape. This will help the plant establish quicker by extending its roots into the surrounding soil.

F. Pruning of Tops

ADD this sentence to the end of the paragraph:

No pruning of tops shall be done without approval of the Landscape Architect for specific cuts.

G. Planting and Backfilling

2. Depth of Transplanting

ADD this paragraph:

A tree’s root flare shall be at or slightly above the finished grade. Determine how deep the root flare is in the ball before placing it in the planting hole.

a. Determine the elevation of the root flare and ensure that it is planted at grade. This may require that the tree be set higher than the grade in the nursery.
b. If the root flare is less than 2 inches below the soil level of the root ball, plant the tree so that the flare is even with the grade. If the flare is more than 2 inches at the center of the root ball the tree shall be rejected.

J. Pruning

ADD this sentence to the end of the paragraph:

Bunchgrasses may require annual clipping in late winter to retain plant health but shall be cut no shorter than 18 inches.

K. Plant Supports and Bracing Trees

REMOVE the third and fourth paragraphs about bracing. Refer to SP608S.4 K & L above.

ADD the following to the end of the section:
For this project, tree support will be provided for trees of the following sizes: 15 gal., 20 gal., 2" cal., and 5" cal.

M. Tree Trunk Protection

REMOVE the paragraph in its entirety and replace with the following:

a. All trees indicated on the Drawings to be wrapped shall be neatly and securely wrapped with a commercial tree wrapping material approved by the Landscape Architect or designated representative. If no wrapping requirements appear on the drawings, submit a drawing of the wrapping method to be used for approval.
b. Wrapping material shall be applied from the base of the tree to the first branch.
c. Wrapping material shall be fastened with biodegradable tape loosely wrapped in a single layer around the wrapping material. The wrap shall not be stapled nor shall it be tied with non- or slowly biodegradable tape, any synthetic tape, any synthetic or natural fiber string, or wire.
d. All wrapping material shall be removed no later than one year after planting.

N. Mulching

REMOVE the paragraph in its entirety and replace with the following:

New plant installations shall receive mulching to a depth of three (3) inches within their water-basin, in a three-foot-diameter ring around newly planted trees or, for shrubs, a small area commensurate with their size, and across the entire landscape bed, unless otherwise indicated by the project Landscape Architect. Unless otherwise stated, the Contractor shall use shredded, hardwood mulch.

P. Maintenance and Initial Plant Replacement

REMOVE “Plant Establishment” from this section and replace with “Substantial Completion”.

ADD this sentence to the end of the third paragraph:
If special conditions exist that warrant a variance in the above planting dates (608S.5.C), a written request shall be submitted to the Landscape Architect stating the special conditions and the proposed variance. Permission for the variance will be given if warranted in the opinion of the Landscape Architect. Any variance in the planting season will not affect the guarantee period.

ADD this paragraph at the end of the section:

The Contractor shall be responsible for replacement of any plants under this contract when, in the opinion of the Landscape Architect, such damage or destruction has resulted from the Contractor’s own action or neglect during the execution of this contract. Replacement shall be done to the satisfaction of the Landscape Architect at the Contractor’s expense. Plants shall be replaced as directed by the Landscape Architect with the same species, size, and quality (or better) as was originally present.

Add the following section at the end 608S.5 Construction Methods

Q. Maintenance and Pest Management

Depending on the nature and extent of infestation, noxious weeds (see Table 1) and invasive species (see Table 2) shall be eliminated by application of an herbicide and/or by physical removal (e.g., by the roots) before and/or during planting, including but not limited to installation of container plants, sod, seed, and the subsequent maintenance of these plants. Weed control may occur before soil disturbance, before plant installation and/or during plant establishment depending on the nature and extent of infestation, the goal being the most effective weed control with the least environmental impact. The Contractor shall consult the Landscape Architect to develop appropriate weed control management strategies as the need arises.

Table 1: Weed List

Weed Type	Botanical Name	Common Name
Herb	*Ambrosia* spp.	Ragweed
Grass	*Bromus unioloides*	Rescue Grass
Herb	*Cenchus spp.*	Sandbur
Herb	*Cnidoscolus texanus*	Bull Nettle
Herb	*Convolvulus spp.*	Bindweed
Herb	*Cyperus esculentus*	Yellow Nutsedge (Nut grass)
Herb	*Cyperus rotundus*	Purple Nutsedge (Nut grass)
Grass	*Digitaris spp.*	Crab Grass
Herb	*Medicago sp.*	Bur-Clover
Grass	*Paspalum dilatatum*	Dallis Grass
Herb	*Torilis arvensis*	Beggar's-tick
Vine	*Toxicodendron radicans*	Poision Ivy
Herb	*Urtica spp.*	Stinging Nettler

Table 2: Invasive Species List

Type	Botanical Name	Common Name
Aquatic	*Eichhornia crassipes*	Water hyacinth
Aquatic	*Hydrilla verticillata*	Hydrilla
Aquatic	*Myriophyllum spicatum*	Eurasian watermilfoil
Grass	*Arundo donax*	Giant reed
Grass	*Bothriochloa ischaemum var. songarica*	Bluestem, King Ranch
Grass	*Cynodon dactylon*	Bermudagrass (common) [1]
Grass	*Phyllostachys aurea*	Golden bamboo
Grass	*Sorghum halepense*	Johnson grass
Herb	*Centaurea melitensis*	Maltese star thistle
Herb	*Colocasia esculenta*	Elephant ear
Herb	*Cyrtomium falcatum*	Japanese netvein hollyfern
Herb	*Rapistrum rugosum*	Bastard cabbage
Herb	*Verbena brasiliensis*	Brazilian verbain
Shrub	*Ligustrum quihuei, sinense*	Privets, small leaf
Shrub	*Nandina domestica*	Sacred bamboo
Shrub	*Photiia serratifolia & x frazeri*	Photinia, Taiwanese & red tipped
Shrub	*Pyracantha coccinea*	Scarlet firethorn
Shrub	*Tamarix spp.*	Salt cedar
Shrub	*Vitex agnus-castus*	Lilac chaste-tree
Tree	*Ailanthus altissima*	Tree of heaven
Tree	*Albizia julibrissin*	Mimosa, Silk tree
Tree	*Broussonetia papyrifera*	Paper mulberry
Tree	*Firmiana simplex*	Chinese parasol tree
Tree	*Ligustrum lucidum, japonicum, vulgare*	Privets, large leaf
Tree	*Melia azedarach*	Chinaberry tree
Tree	*Pistacia chinensis*	Chinese pistache
Tree	*Triadica sebifera*	Chinese tallow tree

[1] Bermudagrass is recognized as useful in certain applications, e.g., ball fields, parks. In many cases it is not necessary or practical to eliminate all Bermudagrass; this shall be determined on a case-by-case basis.

Vine	*Lonicera japonica*	Japanese honeysuckle
Vine	*Macfadyena unguis-cati*	Catclaw vine
Vine	*Pueraria montana var. lobata*	Kudzu
Vine	*Wisteria sinesis*	Chinese wisteria

Revise section heading with the following:
608S.6 Plant Establishment Management Practices

REMOVE the first paragraph in its entirety and **REPLACE** with the following:

"Plant Establishment" shall commence immediately after plant installation and shall extend until the start of the Extended Landscape Maintenance period (SS611) that commences at time of substantial completion. During this Interim Maintenance Period, the Contractor is responsible for all required maintenance operations on all new plantings/seedings, including lawns, native grasses and wildflowers, forbs, perennials, shrubs, and trees. That maintenance may include mowing, edging, weed control, insect control, disease control, animal control, irrigation maintenance, irrigation equipment replacement, and litter pick-up.

Remove all references to 90 calendar days in this section and replace with "the duration of the interim maintenance".

608S.6 C. Mowing and Trimming

REMOVE all references to "shown on or identified on the Drawings."

ADD the following paragraphs:

The stream restoration area of this project contains a Blackland Prairie Zone. This planting area will require great attention during the first two or three years following seeding to ensure successful establishment as native seed germination and initial establishment is not immediate. Although native grasslands evolved under a periodic fire regime and prescribed burns are often used to promote and maintain native grasslands, the urban setting of this project makes the use of this management practice impossible. To mimic the benefits of burning the Contractor can employ mowing, herbicide applications, and even haying. When done properly mowing can be an effective way to control weed competition as a means to ensure the native grasses and wildflowers receive enough light.

During the Plant Establishment Period the Contractor may mow weeds in the Blackland Prairie Zone once they reach a height of 8 to 12 inches or whenever weeds get 2 to 3 times taller than the native plants. With each successive mowing, the blade height should be raised to avoid damaging native plants. Weeds should be mowed before they set seed. Discontinue mowing late in the season. Excessive amounts of cuttings shall be removed from the Blackland Prairie Zone to prevent smothering of native seedlings. Mowing should not occur in the Emergent Plant, Wetland Fringe, and Bunch Grass zones. Native tree seedling recruits that appear in the stream restoration area should not be mowed as their presence in the restoration area is desirable. The Contractor shall make every effort to ensure survival of such plants.

Two or more mowings may be required during the first growing season depending on nature of weed infestation. However, the frequency and extent of mowing will be determined by the height and intensity of weed competition, an assessment which shall be made by the Contractor and the project Landscape Architect.

No string trimmers should be used inside the mulch rings of any trees or shrubs. Weeds in mulch rings should be hand pulled or removed using small hand tools.

608S.6 F. Insect, Disease and Animal Control

REVISE the subsection heading as follows:
F. Insect, Disease, Animal Control, and Weed Management

ADD the following paragraphs:

Weed management in a native planting area is an iterative process requiring great attention during the first two years after installation, and is essential to the success of a native planting.

The Contractor must manage noxious (Table 1) and invasive (Table 2) weeds before initiation of the Extended Landscape Maintenance contract, working towards performance criteria set forth in SS611. During the Plant Establishment Period the Contractor shall remove weeds from all planting areas monthly, or more often as needed, per 608S.5.Q.

The two main tools for weed management during the first two years, at minimum, of native plant establishment are weed removal (manual and chemical control) and selective mowing (in the Blackland Prairie Zone only). All chemical control shall follow the IPM standards and protocols outlined in the City of Austin Grow Green website. Note that the term “pesticide” includes herbicides, fungicides, insecticides and related terms.

The circumstances where chemical control may be considered for weeds include the following:

- Physical, mechanical and other non-chemical methods are unlikely to be successful;
- Perennial species exist (use non-chemical methods for annual weeds); and
- Weeds are too numerous to be removed manually.

Weeds shall be removed before they set seed. Various acceptable manual removal techniques include mowing, hand pulling, weed wrench, hoe, weed popper, or other forked instrument. When hand weeding, remove enough of the root system to prevent re-sprouting. Contractor shall promptly fill any holes resulting from weed removal.

Herbicides may be considered for woody weeds (trees and shrubs) that meet the criteria noted above. A cut-stump method is often used, wherein the trunk and branches are lopped at the base and removed from the site. Many species have the ability to re-sprout after cutting. For these species, the Contractor shall apply an herbicide to the exposed trunk immediately after cutting. Other herbicide application methods may also be considered.

Herbicides may also be considered for herbaceous weeds that meet the criteria noted above. Spot treatments of herbicides should occur as soon as weed species can be definitely identified and before they produce seed. Acceptable application methods include broadcast spray and wick application to foliage. Follow-up applications of herbicide may be necessary to eradicate certain well established plants. Generally, a non-selective herbicide containing glyphosate (e.g. Roundup) shall be used (or approved equal). In riparian areas and near water resources, use only surfactant-free glyphosate, one labeled safe for aquatic use.

After native plant establishment, bi-annual herbicide treatment of weeds may be sufficient to ensure long term success of native plantings. Research done by the Caesar Kleberg Wildlife Research Institute indicates that herbicide treatment applications should occur in early spring and early fall.

Insect pests that must be managed include fire ants. Monitor the site at each maintenance visit for fire ant activity. Pest management materials shall include the use of bait formulated to eliminate the entire colony (including the queen). Refer to City of Austin IPM standards for examples of acceptable fire ant bait products. For active ant mounds use fire ant bait according to label directions. It is anticipated that a bait treatment will need to occur once in the spring and once in the fall.

H. Fertilization

ADD the following paragraph after the first one:

As the nutrients in chemical fertilizer have the potential to become a water pollutant, this activity shall generally not occur in some locations such as stormwater facilities (e.g., rain gardens) and riparian areas. However there may be times when additional nutrients are needed to enhance vegetative growth. This need shall be based on a soil analysis and professional expertise. If fertilization is being considered, the Contractor must first contact the City representative for consent. Chemical fertilizer may be used during the establishment period only. Fertilizer must be slow-release, with no more than 1lb of nitrogen/1000 s.f. allowed per year, and no more than ½ lb per application. After establishment, all improvements are to be maintained without chemical fertilizers, although compost, compost tea and other similar products are acceptable.

ADD the following sections:

J. Reporting of Maintenance Visits

Records shall be kept of maintenance tasks based on, but not limited to, tasks in Attachment ‘A’ of SS611. A written list of site visits noting the action taken, time, date, and personnel shall be provided to the Contract Manager on later than 10 days after a maintenance visit.

608S.7 Acceptability of Plants

REMOVE all references to “Engineer” and replace with “Landscape Architect”.

REMOVE the paragraph in its entirety and replace with the following:

Contractor shall guarantee all installed plant materials to be in a healthy and flourishing condition for a period of one year after substantial completion. Transplanted plants from the site carry no warranty, though Contractor shall make every effort to assure their survival.

The Contractor shall replace without cost all plants determined by the Landscape Architect to be dead or in an unacceptable condition during and at the end of the Warranty Period. Acceptable plants shall be free of dead or dying branches and branch tips, and shall bear foliage of normal density, size, and color. Replacement plants shall meet all requirements specified for the original plant material and shall be planted in accordance with the planting instructions under "Construction Methods". Replacement plants may be installed before termination to the Warranty Period provided that the planting season falls between mid-November and mid-March, weather conditions permitting (e.g., no severe drought).

All replacement plants shall have a one year guarantee from the date of their acceptance after replacement. If a replacement plant is not acceptable during or at the end of the extended guarantee period, the Landscape Architect may elect subsequent replacement or credit for the plant.

608S.9 Payment

REMOVE the following:

Pay Item No. 608S-2: Irrigation System	Lump Sum

ADD the following:

Pay Item No. SP 608S-1A: Planting, 4" container/plug/bare root seedling	Per Each.
Pay Item No. SP 608S-1B: Planting, 1 gal. container	Per Each.
Pay Item No. SP 608S-1C: Planting, 5 gal. container	Per Each.
Pay Item No. SP 608S-1D: Planting, 15 gal. container	Per Each.
Pay Item No. SP 608S-1E: Planting, 20 gal. container	Per Each.
Pay Item No. SP 608S-1F: Planting, 2" caliper tree	Per Each.
Pay Item No. SP 608S-1G: Planting, 5" caliper tree	Per Each.
Pay Item No. SP 608S-2: Hardwood Mulch, 3" thick	Per CY
Pay Item No. SP 608S-3: Tree Support System, per tree	Per Each.
Pay Item No. SP 608S-4: Steel Edging 4"x3/16"	Per LF
Pay Item No. SP 608S-5: Management Practices	Lump Sum
Pay Item No. SP 608S-6: Temporary Fencing	Per LF

End

SPECIAL PROVISION To
Standard Specification Item 609S (Version 08/18/10)
Native Grassland Seeding and Planting for Erosion Control

For this project 609S Native Grassland Seeding and Planting for Erosion Control of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

609S.2 Submittals

ADD the following items**:**

E. Hydromulch product data sheets including all components of hydroseed slurry, including tacking agent, fertilizers, and proposed mulch.
F. Type of hydraulic seeding equipment and nozzles proposed for use.
G. Delivery tickets indicating the quantity of each type of seed delivered to the site.
H. Invoice showing certification of Hydromulch/seed mix as High Performance – Fiber Reinforced Matrix (HP-FRM).
I. Required Inspections During Construction:
   a. Hydromulch installation log (see Attachment A).

609S.3 Materials

ADD the following items:

F. Hydromulch for permanent vegetative stabilization materials shall be Profile Flexterra High Performance – Flexible Growth Medium (HP-FGM) or City-approved equal.

609S.4 Construction Methods, Table 1: Weed List

DELETE the third sentence in the first paragraph and Table 1.

ADD the following sentence to the end of the first paragraph:

Refer to SP608S for lists of noxious weeds and invasive plants, as well as information on pesticides and their application.

ADD the following items**:**

D. Seeding:

Apply seed uniformly with a hydroseeder.

In areas shown on the plans to be seeded but where no grading is proposed, the following activities shall be conducted:

- Scrape the existing vegetation, removing approximately the upper two inches of soil;
- Add a two-inch layer of salvaged topsoil (ref. SP601S);
- Apply specified seeds to topsoil via hydromulch and install blanket per plans, as required by Engineer;

E. Protection of Seed Bed with Hydromulch and/or Soil Retention Blanket.

Newly-installed seeding must be protected by hydromulch and/or soil retention blanket (refer to Standard Specification 605S Soil Retention Blanket) during or immediately after seeding. Protection of the seed bed shall occur in a manner that will allow seed germination and that encourage effective vegetative growth. Hydromulching shall comply with requirements of City of Austin, Environmental Criteria Manual (ECM) Section 1.4.0.

1. Hydromulch
Permanent vegetative stabilization with Hydromulch shall comply with the requirements of ECM Table 1.4.7-C using Profile Flexterra High Performance – Flexible Growth Medium (HP-FGM) or City-approved equal, applied by manufacturer's recommendations paying attention to complete coverage (application in two directions). It shall not be applied if rain is expected within 24 hours or application.

For native seed applications, the Contractor shall rinse the hydroseed slurry tank with water three times to insure that no seed contamination occurs to the specified seed mixes.

609S.5 Native Grassland Seeding and Planting

ADD items to the parenthesis in the first paragraph, second last sentence:

seed spreader, cultipacker seeder

ADD the following after the third paragraph:

Refer to project documents for complete plant list and planting plan.

1. Revegetation in the Emergent Plant (E) and Wetland Fringe (WF) Zones shall be installed with hydromulch in stream restoration areas. The mix shall be equivalent to 'Wetland Fringe Mix' as available from Native American Seed, Junction TX, 800-728-4043, or approved equal. Areas will by hydromulched before emergent plants are installed, unless otherwise directed by Landscape Architect. Cool season cover crop seed shall be added only if required by planting season.
2. Revegetation in the Blackland Prairie Zone (BLP) shall be installed with hydromulch in stream restoration areas. The mix shall be equivalent to 'Blackland Prairie Mix' as available from Native American Seed, Junction TX,

800-728-4043, or approved equal. Cool season cover crop seed shall be added only if required by planting season.
3. Refer to this specification for information on cool season cover crops.

DELETE Tables 2, 3, and 4 in their entirety.

609S.6 Management Practices

ADD the following paragraphs to the end of the section:

Common noxious weeds are in Table 1 of SP608S and City of Austin-defined Invasive Species are in Table 2 of SP608S, although the Contract Manager may ask the Contractor to remove any plant deemed undesirable by the City. Where herbicide and pesticide use is permitted, its application should follow the guidelines in this specification and those stated in City of Austin's Invasive Species Management Plan.

Noxious woody vegetation shall be removed before they set seed. Various acceptable removal techniques include hand pulling, weed wrench, hoe, weed popper, or other forked instrument. When hand weeding, the entire root system of the weed shall be removed. Woody weeds that cannot be removed completely shall be lopped at the base and removed from the site. To prevent re-sprouting, Contractor shall apply an herbicide on the exposed trunk immediately after cutting. Contractor shall promptly fill any holes resulting from weed removal.

In areas where herbaceous weeds are too numerous to be removed manually, the Contractor may use an herbicide (refer to Special Specification 608S.4, J for list of pre-approved herbicides). Acceptable application methods include broadcast spray, wipe on foliage, and cut-stump treatment. Follow-up applications of herbicide may be necessary to eradicate certain well established plants. Contractor shall consult with and obtain prior written approval from the City when they anticipate use of an herbicide and submit a pesticide application tracking log (ref. SS611, Attachment B)

When fire ant mounds are present, Contractor shall use fire ant bait according to label directions. Refer to Special Specification 608S.4, J for list of acceptable fire ant bait. It is anticipated that a bait treatment will need to occur once in the spring and once in the fall.

For this contract, the pay items for Management Practices during the Plant Establishment Period and before Extended Landscape Maintenance are in SP608S.

609S.7 Measurement

DELETE the paragraph in its entirety and replace with the following:

Work and acceptable material for "Native Grassland Seeding and Planting for Erosion Control" will be measured by the square yard (square meter: 1 square meter equals 1.196 square yards) or by the acre (hectare: 1 hectare equals 2.471 acres), complete in place, with coverage rates and plant species diversity per SS611 Tables 2 and 3, Target Coverage Rates, the goal following NRCS Practice Standards of providing adequate cover to control erosion within an acceptable time frame.

609S.8 Payment

DELETE the following pay items:

Pay Item No. 609S-A: Topsoil and Seedbed Preparation Per Square Yard.
Pay Item No. 609S-B: Topsoil and Seedbed Preparation Acre.
Pay Item No. 609S-C: Native Grassland Seeding and Planting Per Square Yard.
Pay Item No. 609S-D: Native Grassland Seeding and Planting Per Acre.
Pay Item No. 609S-E: Watering Per Square Yard.
Pay Item No. 609S-F: Watering Per Acre.
Pay Item No. 609S-G: Management Practices Per Square Yard.
Pay Item No. 609S-H: Management Practices Per Acre.

ADD the following:

Refer to SP601S and SS612 for topsoil and seed bed preparation.
Refer to SP608S for Management Practices during the Plant Establishment Period and Interim Maintenance and to SS611 for Extended Landscape Maintenance.

Maintenance is subsidiary to 608S and SP608S. Irrigation is subsidiary to SS603.

ADD the following pay items:

Pay Item No. SP 609S-A: Native Grassland Seeding, Blackland Prairie Mix, HP-FGM Hydromulch, Per Square Yard.
Pay Item No. SP 609S-B: Native Grassland Seeding, Wetland Fringe Mix, HP-FGM Hydromulch, Per Square Yard.

End

Appendix A
HYDROMULCH LOG

Page No._____of_____

Project Name:_____

ID NO. (CIP, SP, etc.):_____

Date	Time	Start STA	End STA	Bottom Elev.	Top Elev.	~ Sq. Ft.	Hydromulch Type and Qty (lbs.)	Seed Mix Applied	Seed Qty (lbs.)	Fertilizer Added (Yes or No; Type; Amt)	Notes (weather, conditions, etc.)

SPECIAL PROVISION To
Standard Specification Item 610S (Version 09/26/12)
Preservation of Trees and Other Vegetation

For this project 610S Preservation of Trees and Other Vegetation of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

610S.3 Materials

ADD the following items to the end of the section:

G. Mulch

1. Mulch for placement in access routes, storage / staging, and other areas for protection of trees and prevention of rutting, shall be coarsely ground native hardwood mulch.
2. Fresh or partially composted, coarse [greater than ¾ inch (18 mm) average wood particle size] wood-chip mulch from trees is preferred when the objective is to improve soil structure and enhance soil biological activity.
3. Depth and location of mulch should follow ECM: Appendix K, 3.5.2, and 3.5.4.

610S.4 Construction Methods
B: Pruning and Repair of Damage

ADD the following to the end of the first paragraph:

Trees shall be pruned immediately after installation to remove limbs with the following characteristics: broken, split, dead, dying, diseased, or those causing structural problems. The intent of pruning is to select a central leader. In no case shall more than one-quarter of the branching structure be removed. The normal or natural shape of the plant shall be retained.

610S.5 Measurement

ADD the following paragraph to the end of the section:

Placement and maintenance of mulch in access roads and storage/staging areas, and removal and re-vegetation post-construction, will not be measured; all work, labor, materials and equipment related to placement, maintenance, and removal of mulch shall be subsidiary to Item No. SS-696 Temporary Access Routes and Ramps.

610S.6 Pay Items

ADD the following pay items:

Pay Item SP 610S-R-1:	Removal of trees 4”- 8” caliper	Per Each.
Pay Item SP 610S-R-2:	Removal of trees 9”-13”caliper	Per Each.
Pay Item SP 610S-R-3:	Removal of trees 14”-18”caliper	Per Each.
Pay Item SP 610S-R-4:	Removal of trees 19”-23”caliper	Per Each.

End

SPECIAL PROVISION TO
Standard Specification Item No. 640S, Mortared Rock Wall (Version 02/24/10)

For this project, Item No. 640S Mortared Rock Wall of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

Article 640S.2 Submittals

Delete this section in its entirety and replace with:

A. Chopped block (storm sewer outfall retrofits and rain garden): The type, size, source, and photo of chopped limestone block. Photo shall clearly and accurately characterize the size, shape, and colors of the block. Prior to construction, include a sample for approval of quality assurance and color.

B. Boulders: The type, size, source, and photo of boulders. Photo shall clearly and accurately characterize the size, shape, and colors of the boulder. Prior to construction, include a sample for approval of quality assurance and color.

C. Mortar mix design, including materials and mix ratios.

D. Drainage fill: The type, material source, nominal size, and gradation of drainage fill.

E. Filter Fabric: The product name, material type, evidence that the material is listed on the TxDOT Approved Materials Producers List for conforming to the Department Materials Specification DMS-6200, “Filter Fabric”, and one full set of manufacturer’s product technical data and installation recommendations.

F. Geogrid: The product name and one full set of manufacturer’s product technical data and installation recommendations.

Article 640S.3 Materials

Delete item A in its entirety and replace with:

A. Rock:
<u>Chopped Block - Rain Garden:</u>
The rock used for the rain garden walls shall be chopped limestone with dimensions that lie within the following ranges: 6” height x 12” width x 24” length. Note: Contractor will also need 20-Linear Feet (ten pieces) of 5” height stone, for the rain garden overflow weirs. The rock shall be Custom Stone Supply “Blanco” chopped block or

approved equal. The blocks shall be comprised of solid rock without excessive fractures, spalls, or weak layers. The minimum specific gravity of the boulders shall be 2.4. The below photo demonstrates the target rock size and color:

Figure 1: Custom Stone Supply "Blanco" chopped block (top)

Chopped Block - Storm Sewer Outfall Retrofits: The rock used for the headwalls in storm sewer outfall retrofits A and C shall be chopped limestone with dimensions that lie within the following ranges: 4-6" height x 8-10" width x 12-24" length. The rock shall be Custom Stone Supply "Granbury" chopped block or approved equal. The blocks shall be comprised of solid rock without excessive fractures, spalls, or weak layers. The minimum specific gravity of the boulders shall be 2.4. The below photo demonstrates the target rock size and color:

Figure 2: Custom Stone Supply "Granbury" chopped block

Boulders: The rock used for the wall in storm sewer outfall retrofit B shall be weathered, natural limestone, pallet sized boulders. The dimensions shall lie within the following

ranges: 6-8” height x 18-36” width x 24-60” length, such as Superior Stone Inc. weathered, natural limestone boulders or approved equal. Boulders shall be irregular in shape, have a rough surface on all edges, have no edges that are sawcut, and vary in color to provide a natural aesthetic (see sample pictures below). Boulders shall be comprised of solid rock without excessive fractures, spalls, or weak layers to achieve these dimensions. The minimum specific gravity of the boulders shall be 2.4. The below photo demonstrates the target boulder size and color:

Figure 3: Superior Stone Inc. weathered, natural limestone boulders

Add the following:

H. Drainage Fill: The drainage fill shall be grade 10 aggregate per Special Provision 403S, TCS #066 1 ¾” – ¾” ballast, or approved equal. The fill material and purity shall conform to Special Provision 403S.

I. Filter fabric: The filter fabric placed behind the headwall shall be a TXDOT-approved Type 1, nonwoven filter fabric, Tencate Mirafi 140NC or approved equal.

J. Geogrid: The uniaxial geogrid used to reinforce the headwalls shall have a minimum ultimate tensile strength of 4800 lb/ft and shall be Tensar UX1400HS or approved equal.

Article 640S.4 Construction Methods

Delete this section in its entirety and replace with the following:

Mortared rock walls shall consist of courses of rock with the spaces between them filled with mortar. The walls shall be constructed at such places as indicated in the Drawings or as directed by the Engineer, in accordance with these specifications and with the lines, grades, height, depth, and other details shown in the Drawings. Rock shall be laid plumb, level, or true to a line. All rock shall be laid in a full bed of mortar with head joints and edge joints completely filled, with the exception of storm sewer outfall retrofit B as well as the vertical joints on the bottom two exposed courses and the buried courses of rock. In these courses, every other (alternating) vertical joint shall be left unmortared in order to allow drainage. Unmortared, exterior joints that will remain exposed shall be finished in a manner approved by the Engineer.

For storm sewer outfall retrofits A and C, rock courses shall be placed such that each course is comprised of rocks of varying rather than uniform length, complying with the dimensions described in Section 640S.3. Rocks in neighboring courses shall overlap by a one quarter to one half running bond. Rocks placed adjacent to the pipe may be of shorter length or height as needed, to fit around the convex pipe surface. Rocks shall be oriented such that the colorful, warm tones of the rock face outward and are visible on the face of the finished headwall. No mortar shall be placed on the top face of the top course, leaving the natural surface of the stones visible at the top of the headwall.

At storm sewer outfall retrofits A and C, uniaxial geogrid shall be placed and mortared between rock courses at the elevations specified in the Drawings, but shall not be visible from the wall face. Geogrid lengths shall be equal to or greater than the lengths specified in the drawings. Volume that is excavated behind headwall shall be replaced with native onsite bank material as backfill, and shall be installed and compacted per Standard Specification 132S.

At storm sewer outfall retrofit B, the Contractor shall arrange an onsite meeting with the Engineer and Landscape Architect for approval of boulder selection and placement prior to construction of the headwall. The headwall shall be constructed according to the plan drawings and details in a manner that mimics a natural limestone outcropping, with boulders of varying size placed in an irregular pattern. On exterior joints, the mortar between boulders shall be recessed 3” from the face of the wall, so that the mortar is not visible at the face of the wall.

For the Denver Rain garden, all rock will be placed on concrete footings as indicated in the plans and details. All joints shall be mortared and water-tight, as the walls will function as check dams for the rain garden. Rock should be carefully placed to achieve the specified elevations, including the two overflow weirs that are ten feet long each.

In hot weather, stone work shall be kept moist until the mortar has set. No mortar work will be done when the temperature is below 40^{o}F (4^{o}C) in the shade and all work may be suspended during freezing or undesirable weather. The mortar materials shall be mixed mechanically for not less than 5 minutes after all ingredients are in the mixer. Mortar that has begun to set or that has been mixed for more than 2 hours shall not be used.

Spalls may be used in partially filling the large voids, provided they are keyed in properly and are well coated with mortar. All finished rockwork shall be protected from damage. Chipped rockwork, that will remain exposed, shall be satisfactorily repaired or replaced, as determined by the Engineer.

Behind the mortared rock walls shall be a vertical layer of drainage fill. The width of the drainage fill shall be as shown in the Drawings. Where shown on the Drawings, fabric filter shall be wrapped around the drainage fill aggregate such that it covers three sides of the fill profile: the front, between the aggregate and the headwall; the top, between the aggregate and the topsoil, and the back, between the aggregate and the native earth. The filter fabric shall extend to the locations shown in the Drawings, and may be cut to accommodate the pipe.

Prior to placing any material, the footings shall have been placed by the Contractor as part of this contract to the approved line and grade and allowed at least 36 hours curing time. The rock shall then be thoroughly wet and bedded in 1 inch (25 mm) of mortar placed on the footings, one against the other, with the resulting voids being completely filled with mortar. The finished surface shall be even and level.

Article 640S.5 Measurement

Delete this section in its entirety and replace with the following:

Mortared rock wall will be measured by the square foot (square meter: 1 square meter equals 10.76 square feet) of the front, vertical face of wall. No measurement will be made for the concrete footings, excavation, backfill, drainage fill, filter fabric, geogrid, mortar, or any other wall components, as these shall be included in the unit bid price for mortared rock wall construction.

Article 640S.6 Payment

Add the following pay items:

Pay Item No. SP-640S-A	Mortared Rock Wall – Storm Sewer Outfall Retrofit A	Per Square Foot
Pay Item No. SP-640S-B	Mortared Rock Wall – Storm Sewer Outfall Retrofit B	Per Square Foot
Pay Item No. SP-640S-C	Mortared Rock Wall – Storm Sewer Outfall Retrofit C, Including Flow Spreader	Per Square Foot
Pay Item No. SP-640S-D	Mortared Rock Wall - Rain Garden	Per Square Foot

End

SPECIAL PROVISION TO

Standard Specification ITEM NO. 1301S, "GRANITE GRAVEL HIKE AND BIKE TRAIL"

For this project, Item No. 1301 of the Standard Specifications, "Granite Gravel Hike and Bike Trail," dated 8/16/2004, is hereby amended with respect to the clauses cited below. No other clauses or requirements of this item are waived or changed hereby.

1301S.01 Description

DELETE the first sentence of the first paragraph and replace with the following:

This standard specification item shall govern furnishing and placing red granite gravel surfacing for hike and bike trails, as well as all earthwork and ancillary features necessary to construct the trails to the proper grades as specified in the Drawings, including excavation, embankment, and compaction, plus detectable warning strips and log retaining wall.

1301S.3 Materials

ADD the following to the end of the section:

Logs

Logs must be either "mountain cedar" (*Juniperus ashei*) or eastern red cedar (*Juniperus virginiana*), native to and collected in Central Texas. They must be approximately eight inches in diameter and eight feet long. Logs shall be fastened to the ground every 24 inches using #4 rebar.

ADA Compliant Pavers

ADA compliant pavers for the detectable warning strip shall be concrete pavers, nominal dimensions 3 7/8"W x 7 13/16"L, made by Pavestone Company, or approved alternate.

1301S.4 Construction

ADD the following after the second paragraph of Item (2) Subgrade Preparation:

Where fill is required adjacent to the trail, onsite excavated material from the trail construction shall be used, except as noted on the Topsoil Treatment Plan: Streambank and Channel. All placement and compaction of earth embankment shall comply with Standard Specification Item No. 132S, "Embankment." As shown in the Drawings, the trail shall maintain a running slope of not more than 5%, unless specifically called out in the Drawings, and a cross slope of not more than 2% that extends two feet in width on either side of the trail. Therefore, the subgrade shall be graded accordingly.

ADD the following paragraphs to the end of the section**:**

(5) Log Retaining Wall

Anchor logs into place in location shown on Greenbelt Park Trail plan using #4 rebar driven through logs into existing soil at least 24 inches in depth. Do not drive rebar through tree roots. Use four rebar per log, starting one foot from ends. Drill pilot hole for rebar that is slightly smaller than ½ inch to achieve tight fit.

(6) Detectable Warning Strip

Use ADA compliant pavers set in concrete pad to form a two foot long by five feet wide (the width of the granite trail) detectable warning strip per detail on Greenbelt Park Trail plan. Two warning strips shall be built at locations shown on plan.

(7) Revegetation

The area of the existing greenbelt impacted by trail construction shall be re-vegetated with Bermudagrass hydroseed per SP604S, “Seeding for Erosion Control”. The Contractor shall provide supplemental water to the seeded areas until the grass is established, that is, until the grass is fully rooted, achieves 95% coverage, and reaches a height of 1 ½ inches. Once established, Contractor may relinquish maintenance of the Trail Park Area (Figure 1, SS611) back to the City of Austin Parks and Recreation Department. The work of supplemental water shall follow SS603, “Irrigation System (Temporary),” water truck.

1301S.6 Payment

DELETE the second sentence and replace with the following:

The unit bid price shall include full compensation for all work specified herein, including the protection of existing trees, property and public right-of-way, traffic control measures, the earthwork and ancillary features (e.g., log retaining wall, detectable warning strips, revegetation) necessary to finish the trail to the proper grade and compaction, and the furnishing, hauling, placing and compacting of all materials; for rolling, proof rolling, recompaction and refinishing; for all water required; for retesting as necessary; and for all equipment, tools, labor and incidentals necessary to complete the Work.

End

Special Specification 603
Irrigation System (Temporary)

603.1 Description

This item shall consist of all materials, labor, equipment, tools, and incidentals necessary to perform the work of irrigation system installation as specified in this section and related documents. These specifications relate to the installation phase (described in Items No. 602S, 604S and 608S, 609S, and their Special Provisions), and to the following maintenance phase (Item No. SS-611) as required.

The Specifications indicate and specify a complete and efficient landscape irrigation system which will operate in accordance with the specified equipment manufacturer's recommendations and with state and local codes and regulations. Items not specified, but found to be necessary for a complete system, shall be furnished under this Contract.

The irrigation system will be temporary. All above ground line will be placed as unobtrusively as possible, to be out of sight of park and trail users to the extent possible. In areas where it is not possible or practical to extend the temporary system, supplemental water shall be provided by truck watering or hand watering (e.g., hose, gator bag). These areas include parts of the Pershing Drive Urban Trail on the east side of Pershing Drive and for revegetation along the Park Trail where the narrow linear nature of revegetation make it impractical to install irrigation. In this area the Contractor shall water the hydromulched areas along the trail with a water truck until the seed is established, except for the section of trail interior to the park where no heavy vehicles should be driven.

A. Scope of Work

Install a complete and efficient landscape irrigation system which will operate in accordance with the specified equipment manufacturer's recommendations and with state and local codes and regulations. The irrigation system will include:

1. Temporary meter, backflow prevention, valves.
2. bubblers for each tree.
3. Rotors or rotary nozzles for seeded revegetation areas. For sloping bank areas, install irrigation at the top of the bank and spray down on to the slope.
4. All other elements necessary to provide a fully functioning, efficient irrigation system.

Temporary irrigation will be kept in place for the entire maintenance/warranty period, and then removed (above ground sections) or abandoned (subsurface sections) by Contractor.

B. Qualification of Installer

A Texas-licensed landscape irrigator in good standing, approved by the Owner or his agent, with a minimum of 5 years continuous experience in installing systems of this type, and who is regularly engaged in installing landscape irrigation systems shall be employed for this Work.

603.2 Permits and Inspections

The Contractor shall obtain necessary permits, tests, and inspections, and pay any related fees and taxes required by governing agencies.

604.3 Submittals

The submittal requirements for this specification item shall include:

1. Copy of Irrigator's license issued by the Texas Commission on Environmental Quality (TCEQ).
2. Per State of Texas code (Title 30, Texas Administrative Code, Chapter 344, Rules for Landscape Irrigation) the Contractor shall provide the Owner with a watering schedule. This schedule shall be a chart listing zone number, zone flow (gpm), run time (minutes/month), type of vegetation irrigated per zone (e.g., trees, bunch grasses), and type of emission device per zone (e.g., bubblers, rotors).
3. In the event of mandated watering restrictions, provide a completed variance request approved by Austin Water Utility.
4. As-built irrigation plan showing all emission devices, valves, controller, backflow prevention device, and sized pipes.
5. Completed irrigation system maintenance checklist (Attachment A). The first sheet of Attachment A is due after the irrigation system is completed, during time of inspection with Owner. The second sheet of Attachment A is due yearly, in the spring when the system is reinitiated during the extended landscape maintenance period.

603.4 Damage to Property

A. Repair or replace any property damage inflicted in the course of the irrigation installation, without additional charge and before final payment. Included are damages to building, paving, structures, equipment, piping, pipe covering, utilities, sewers, walls, signs, sidewalks and landscaping.

B. The Irrigation Installer is responsible for damage caused by leaks in the piping systems and shall make repairs without charge.

C. The Irrigation Installer shall repair damage to the system caused by others so the system is fully functioning at all times, from the point of installation through the applicable extended landscape maintenance period. As stipulated in Paragraph 3.7 of Section 01500, repair expenses, including but not limited to labor and materials, shall not be charged to the Owner and are the Contractor's responsibility.

603.5 Existing Conditions

A. Field verify all existing site conditions. By bidding this Work, the Contractor acknowledges that they have satisfied themselves as to the nature of the Work and to the quality of surface and subsurface materials and obstacles insofar as this data is reasonably ascertainable from a site inspection. Failure of the Contractor to acquaint themselves with the available information will not relieve their responsibility of proper estimation of the difficulty or cost of successful performance of the Work.

B. Contractor shall locate all utilities in work area before installation. Any damage to existing utilities occurring during irrigation installation requiring repair or replacement shall be the Contractor's responsibility. This replacement clause extends to existing trees and other landscape materials proposed for preservation.

C. Verify water supply static pressure and volume as adequate before system installation. Report inadequacies immediately to the Owner or Irrigation Designer of record for resolution. In cases of high pressure, pressure reduction equipment shall be used.

D. The irrigation installation shall account for elevation changes on the site as part of pressure considerations.

E. Irrigation layout shall account for slope on a site. Pipes should run perpendicular to a slope where possible. For temporary irrigation systems, above ground pipes should be secured to slopes every 10 feet in a manner that does not create a safety hazard. Stake temporary, above ground lateral pipes at end points.

F. Determine and verify the location and size of the irrigation meter to be used for this project. Contractor is responsible for the tap, for following state and municipal regulations regarding connection to the water supply, and for obtaining all required permits and inspections.

603.6 Materials

Provide all equipment and materials necessary to complete work. All materials and equipment shall be new and unused, except for Yelomine pipe which is manufactured for reuse.

A. Pipe and Tube

1. Irrigation lines: Polyvinyl chloride pipe (PVC): rigid, un-plasticized PVC pipe, extruded from virgin parent material. Provide pipe that is homogenous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles and dents. Purple pipe shall be used when non-potable water is used to irrigate a site.

   (a) Lateral: Class 200 (SDR 21).
   (b) Mainline: Schedule 40 PVC; Yelomine (ASTM D2241); or C900/RJ PVC.
   (c) Sleeves: Schedule 40 PVC (4”); SDR Class 200 (<4”).
   (d) Reference Standards: ASTM 1785-99, ASTM D2241-09, ASTM D2564-12, ASTM D2855–96(2010).

2. Velocity: The irrigation system must be designed and installed so that the flow of water in the pipe will not exceed a velocity of five (5) feet per second.

B. Connections

1. PVC Fittings: Use PVC molded fittings of the same material and pressure rating or schedule as the adjoining PVC pipe. Use fittings suitable for solvent weld, slip-joint ring tight seal, or screwed connections, as required, to properly join PVC pipe.

2. Use PVC solvent primer (color-treated) on all PVC joints in preparation for of the solvent weld.

3. Use solvent cement of a type approved by the pipe manufacturer on all PVC connections. Cement must be National Sanitation Foundation (NSF) approved and meet ASTM D2564-12 specifications.

C. Swing Joints

1. All risers and swing joint nipples shall be unplasticized polyvinyl-chloride, Schedule 80, threaded pipe.

D. Valves

1. Isolation Valves – threaded or bolted flange attachments:

(a) Install isolation valve between the water meter and backflow prevention device. This valve shall be iron body gate valve with resilient seat, non-rising stem with square key on 2-inch or larger.

(b) Where required, install an isolation valve upstream of each remote control valve. Isolation valves upstream of remote control valves can be plastic ball valve construction.

2. Remote Control Valves:

(a) Electric control valves shall be electrically operated, normally closed, diaphragm type, and be installed following published recommendations of the manufacturer.
(b) Valves shall be slow closing and opening.
(c) Valves shall have manual flow control and manual bleed.

3. Quick Coupling Valves:

(a) Where required, provide a quick coupler valve with 2-piece heavy cast bronze body and rubber cover. Provide single-lug bronze keys with compatible swivel hose ells.
(b) Coupler shall be in a covered purple valve box.
(c) Install an isolation valve immediately upstream of each quick coupler.

E. Gate Valves

1. As manufactured by Nibco, or approved equal.

F. Check Valves:

1. In-head check valves shall be installed next to paved areas where elevation differences may cause low head drainage.

G. Backflow Prevention Devices

1. Provide a Double Check Backflow Prevention (DCA) or Reduced Pressure Backflow Prevention Device (RPZ) as noted in the plans.

2. Backflow prevention assembly shall consist of a bronze body, 909 Celcon check seats, stainless steel relief valve seats and bronze test cocks. All internal parts are of corrosion resistant materials.

3. Backflow prevention assembly will be constructed so that all internal parts can be serviced without removing the device from the line. These assemblies are rated to 175 psi water working pressure and water temperatures from 32°F to 140°F.

4. All backflow devices must be tested by a Licensed Backflow Prevention Device Tester.

5. Backflow device may be in an enclosure, appropriately located and sized to ensure accessibility for testing.

H. Valve Boxes

1. Provide plastic valve box for enclosure of all valves, ten (10) inch minimum or larger.

I. Gravel

1. Provide gravel as noted in plans and details.

J. Emission Devices

1. Provide new heads and nozzle assemblies as manufactured by Rainbird, Hunter, or approved equal.

2. Provide drip tubing by Netafim or Rainbird, or approved equal, or as specified in the plans.

3. All emission devices within a zone must irrigate at the same precipitation rate (matched precipitation rate). Emission devices of different types (i.e., spray head, bubblers, drip tubing) shall not be used together within the same zone.

K. Controller

1. A weather-based ET controller is typically required per City of Austin code for irrigation systems, although for temporary irrigation systems, a battery operated controller such as the Hunter Node is acceptable.

2. An automatic rain shut-off device (wired or wire-less) shall be associated with the controller. It must terminate operation of the irrigation system after not more than one-half inch rainfall. This sensor must be mounted in an open location, not obscured by tree branches, roofs, and other overhead obstructions.

3. The controller must be in a secure, weather and vandal resistant enclosure mounted in a location approved by the Owner.

4. Seasonal Water Schedule: one copy of the schedule shall be placed in a plastic sleeve inside the controller enclosure and one copy shall be provided to the Owner. Where there is no controller enclosure on site, the schedule shall be provided to the City of Austin project manager. **In the event of mandated water restrictions,** the controller shall be set according to the restrictions mandated by the regulatory agency and kept in compliance until the restrictions change. It may be possible to water outside the mandated schedule providing that the appropriate variance is obtained from the City of Austin Water Utility.

L. Pressure Regulation

1. The irrigation system shall be designed and installed to operate within adequate pressure conditions. Available static pressure shall be determined by the Contractor before installation.

2. If available static pressure is excessive, the Contractor shall install pressure reducing valve.

3. Pressure reducing valves must be installed in valve boxes.

M. Water

Source of water may be potable (e.g., fire hydrant) or non-potable (e.g., stream, lake, reclaimed water) as long as the supply is readily available and dependable.

The Contractor shall determine the temporary watering equipment appropriate to meet the performance requirements set forth in this specification.

One fire hydrant may be available for use in temporary irrigation of this project. It is at the intersection of Pershing Drive and Denver Avenue. Contact the Austin Water Utility to apply for a fire hydrant water meter and set up a temporary account.

Austin Water Utility - Taps Office
625 E. 10th, Suite 200
Austin, Texas 78701
(512) 972-0006

603.7 Construction/Maintenance Methods

Provide all construction equipment and methods required to complete work.

A. System Design and Layout

1. Water Supply: Verify location and source of the water meter or tap for irrigation. Perform tests as needed to verify the pressure and volume are adequate to run the system as designed and with full, even and complete coverage. If volume and pressure are less than 50 gpm and 60 psi respectively, notify the Owner or Irrigation designer immediately before proceeding with the work. When necessary, supplemental water, in addition to the permanent and/or temporary sources, can be provided via water truck or other. This may be needed during times of mandatory water restrictions to provide sufficient water to the landscape.

2. Standard Installation: Perform all Work and provide material in accordance with the local codes and ordinances in force at the job site. Where provisions of these Specifications exceed such requirements, these specifications shall govern.

B. Layout

1. Installer is responsible for locating valves, piping and fittings relative to existing conditions as the Drawings may show schematic layout only.
2. If a discrepancy in the size and shape of areas to be watered becomes apparent in the Drawings at the time of installation, such discrepancy shall be discussed with the Irrigation designer or Owner before commencement of the installation.
3. Work shall not proceed until design changes have been approved.
4. Should such changes create extra cost, a Change Order for extra compensation shall be obtained in writing from the Owner before commencing Work.
5. Should such changes create a savings in cost, a written reduction in the contract price shall be approved by the Owner in writing before commencing Work.
6. All materials shall be installed in strict accordance to the manufacturer's installation specifications.
7. All layout is to be based on final locations of planting beds, tree locations, etc. Coordinate with landscape contractor before installing these areas.
8. Hydrozoning is required. Plants of different water requirement, and those irrigated with different emission devices (e.g., spray heads vs. rotors) shall be on separate zones, including tree bubblers. Drip and spray irrigation must not be on common zones.
9. The maximum spacing between emission devices must not exceed the radius of throw recommended by the manufacturer.

C. Excavation

Excavate as necessary to meet local codes and to complete work.

1. Trenches

(a) Hand trench only in critical root zone[1] of large (>18 caliper inches) existing trees and their root systems, taking care to work piping around roots where possible rather than cutting. Do not cut any roots larger than one inch diameter.

(b) Dig trenches no wider than necessary to lay pipe.

(c) Provide trenches of sufficient depth to provide minimum cover above the top of pipe according to manufacturer's specification. If no published specification minimum depth, coverage of 12 inches over lateral lines and 15 inches over main lines. Clearly and visibly flag all open trenches, hole and depressions until adequately filled or repaired.

(d) A minimum of two inches of sand bedding may be installed completely around the pipe. Fill to match adjacent grade elevations with approved sandy loam backfill free from rocks and debris in layers not greater than six inches depth.

D. Pipe Fitting and Assembly

1. Keep ends of pipe securely closed when Work is not in operation to prevent water and other matter from entering the lines.
2. The routing of the pressure supply lines shall avoid large tree roots and other existing items. Deviate where necessary and install lines to provide coverage without off-setting assemblies from pressure supply lines.
3. Piping Erection:

(a) General. The Installer is responsible for being familiar with any and all methods of assemblage, joining and installation of various types of pipe to be used. Adhere in strict accordance with the manufacturer's recommendations.

(b) Polyvinyl chloride (PVC) pipe:

(1) Exercise care in handling, loading, unloading and storing plastic pipe and fittings.

(2) Make all changes in direction of pipe with fittings, not by bending pipe.

(3) Solvent joints. Make sure pipe is cut square and all connecting surfaces are properly cleaned and dry. Apply an even coat of solvent to the outside and inside of the fitting. Insert the pipe quickly into the fitting and turn pipe approximately 1/4 turn to distribute the solvent and remove air bubbles. Hold the joint for approximately 15 seconds so the fitting does not push off the pipe. Using a clean rag, wipe off all excessive solvent to prevent weakening at joint. Exercise care in going to the next joint so that the pipe is not twisted, thereby disturbing the last completed joint. Allow at least 15 minutes set-up time for each solvent welded joint before moving.

E. Valves

1. Install valves in 10-inch minimum size plastic valve boxes.
2. Isolation valves shall be set vertically.

[1] A tree's critical root zone roughly corresponds to the edge of its dripline.

3. Remote control valves should be adjusted to provide the proper pressure at the emission device.

F. Backflow Prevention Devices

1. Install backflow prevention device as per requirements of City of Austin Uniform Plumbing Code and Austin Water Utility at location determined by Owner and shown on Drawings.

2. Provide testing and coordinate inspection of the backflow preventer as required by state statute and as per City of Austin requirements.

G. Sleeves

1. Provide new sleeves for all locations as needed at pavement or walls before their installation. Install sleeves before the installation of pavement or walls. Extend sleeve pipes 12 inches beyond edges of pavement and cap. Mark locations of sleeves with paint of the pavement or other approved marking.

2. For areas of existing pavement, install sleeves by boring under the hardscape. Where boring is unfeasible, pavement can be cut and patched in a method acceptable to the Owner.

3. Sleeves shall be at least twice the diameter of the pipe or wire to be encased.

H. Emission Devices

1. Spray heads shall be set back at least six (6) inches from impervious surfaces. In the City of Austin right-of-way, sprays heads shall be set back two (2) feet from the back of curb.

2. No spray irrigation heads shall be installed on areas less than six (6) feet wide. Instead, drip irrigation is permitted.

3. Sprinklers shall not directly overspray onto non-irrigated areas (e.g., parking lots, sidewalks).

4. Tree bubblers shall be placed at the edge of the tree root ball.

5. All emission devices shall be installed, where applicable, in plumb position, with proper spacing and in locations shown on the plans.

I. Controller

1. A weather-based ET controller and associated rain shut-off sensor shall be mounted in locations approved by the Owner.

2. The controller must be in a secure, weather and vandal resistant, lockable enclosure mounted in a location approved by the Owner.

3. Contract shall put a sticker on the controller with their company contact information.

4. For temporary irrigation system where access to electricity is a limiting factor, a battery operated controller such as the Hunter Node is acceptable.

J. Control Wiring

1. Control wire shall be of the size and type recommended by the valve manufacturer, with a minimum gauge of 14 AWG.

2. Waterproof connectors shall be used at each splice and placed in a sufficiently-sized valve box.

K. Watering Schedule

1. Contractor shall provide the Owner with a chart listing information for each zone, including precipitation rate, gallons per minute (gpm), and run time for each season.

L. Inspection, Testing and Approval

1. Do not enclose or cover any Work until it has been inspected, tested and approved per local codes. Where required, contact the Owner Architect to arrange an inspection.

2. Hydrostatic Piping Test:

(a) In the presence of the Owner, hydrostatically test the mainline piping system. Test to a minimum psi of 100. Test period shall not be less than 4 hours. Pipe may be tested in sections to expedite the work.

(b) Test is acceptable if no leakage occurs during test period.

(c) Repair all leaks and retest system for another 4-hour period if necessary. Continue this procedure until all leaks are repaired.

3. Operation Test:

(a) After all equipment is installed, test the system for coverage, flow and pressure in the presence of the Owner.
(b) Test is acceptable if system operates satisfactorily, with adequate pressure and flow and if all irrigated areas are receiving proper coverage with no overspray onto pavement or buildings.
(c) After all required adjustments are made, coordinate with Owner to obtain an inspection by a City of Austin Irrigation Inspector, if required.

4. Final Acceptance:

(a) Final Acceptance may be given when all punchlist items are satisfactorily completed and, if required, a City of Austin Irrigation Inspector has approved the job (with all comments acceptable addressed).

M. Cleanup

1. Maintain a clean work area during the progress of the Work within reasonable limits of the installation area. Periodically remove all rubbish, debris, etc., from Work site and dispose legally.

2. Upon completion of the Work, remove all construction and installation equipment from the premises; make ground surface level where it has been affected by irrigation system installation; and remove excess materials, rubbish and debris.

3. Immediately replace and thoroughly hand water any plant material and groundcover which may be displaced during installation.

603.4 Measurement

Work and acceptable material for “Temporary Irrigation System” will be measured as a complete system in working order with all the elements necessary to fulfill the landscape design intent.

603.5 Payment

The work performed will be paid for at the unit price bid for “Irrigation System”, which price shall be full compensation for furnishing and installing all components; flushing and testing waterlines; furnishing and operating equipment; water; and labor, tools, and incidentals. The work will comprise duration up to and including the project Substantial Completion and through to the end of the Extended Maintenance Period(s). Water during the Interim Maintenance period shall be subsumed under the Pay Item No. SP680S-5, Management Practices. After Substantial Completion, payment for irrigation water will be under Pay Items SS 603-D-SCI, -UT, and -RG.

Payment will be made under:

Pay Item SS-603-A-SCI: Temporary Irrigation System, above-ground installation and removal, for stream channel improvements. Per LS.
Pay Item SS-603-A-UT: Temporary Irrigation System, above-ground installation and removal, for urban trail and swale. Per LS.
Pay Item SS-603-A-RG: Temporary Irrigation System, above-ground installation and removal, for rain gardens. Per LS.
Pay Item SS-603-B: Temporary Irrigation System, subsurface installation, Per LS.
Pay Item SS-603-C: Temporary Irrigation, Hand-watering with water truck, Per HR.
Pay Item SS-603-D-SCI: Temporary Irrigation System – water budget (5 years), for stream channel improvements Per KGAL.
Pay Item SS-603-D-UT: Temporary Irrigation System – water budget (3 years), for urban trail and swale. Per KGAL.
Pay Item SS-603-D-RG: Temporary Irrigation System – water budget (3 years), for rain gardens. Per KGAL.

END

ATTACHMENT A to SS603—IRRIGATION SYSTEM MAINTENANCE CHECKLIST

Installation Completion Date: _____
Project Name:_____ CIP/SP No.:_____
Address: _____

The following items have been provided and explained to the irrigation system owner or system owner's representative.

- □ The manufacturer's manual for the controller.
- □ A seasonal watering schedule.
- □ A list of components that require maintenance and the recommended frequency of maintenance is attached.
- □ A permanent sticker has been attached to the controller indicating the warranty period for the irrigation system and contact information.
- □ The corrected or re-drawn design plans indicating the actual installation and components of the system.
- □ Location and operation of the isolation valve.

_____ _____
Irrigation system owner/representative Date

This irrigation system has been installed in accordance with all applicable state and local laws, ordinances, rules, regulations or orders. I have tested the system and determined that it has been installed according to the Irrigation Plan and is properly adjusted for the most efficient application of water at this time.

_____ _____
Irrigator's Signature Date

_____ _____
Irrigation Technician Signature Date

Irrigator's Seal

Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ) (MC-178), P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's web site is: www.tceq.state.tx.us

ATTACHMENT A to SS603—IRRIGATION SYSTEM MAINTENANCE CHECKLIST (continued)

Components Requiring Maintenance

Irrigation System:
- □ Winterization
- □ Return to normal service

Sprinkler Heads:
- □ Missing heads
- □ Broken heads
- □ Clogged heads
- □ Tilted heads
- □ Heads spraying in wrong direction
- □ Heads too far in or above the ground or vegetation
- □ Water constantly seeping from head(s)
- □ Water spraying in a fine mist
- □ Uneven and incomplete sprinkler coverage
- □ Blocked or misdirected spray pattern
- □ Water spray onto sidewalks, decks, buildings, driveways or the street

Controller:
- □ Controller cabinet lock broken
- □ Loose wires (Take care with wires of 110 volt)
- □ Worn wires (Take care with wires of 110 volt)
- □ Dead or old battery
- □ Run time(s) and day incorrect
- □ Rain or moisture sensor (or other technology) disconnected from the controller or ground wire
- □ Controller not programmed for the appropriate season

Valves:
- □ Broken or missing valve boxes and covers
- □ Faulty valve electrical connections or dead batteries

Back Flow Prevention Device:
- □ Not tested per requirements

Drip/Micro Irrigation:
- □ Emitters unconnected from flex line
- □ Flex line unconnected from riser
- □ Micro adjustment nozzle unconnected from flex line and nozzle not intact
- □ Filter strainer clogged
- □ Automatic flush valves not operating properly
- □ Operational pressure is too high

Special Specification 611
Extended Landscape Maintenance

611.1 Description

This item shall consist of all materials, labor, equipment, tools, and incidentals necessary to perform the work of landscape maintenance as specified in this section and related documents. The extended landscape maintenance will begin on the date the project has been deemed substantially complete, and continue for a period of three to five years depending on the specific area of the project as defined below.

A. Scope of Work

Standard maintenance activities (e.g., irrigation, weeding) as covered under SP608S and other related documents (such as SS611.1.B.1) shall commence immediately after each plant is installed, and continue up until substantial completion, at which time the extended landscape maintenance work in this specification shall begin. The work shall consist of site monitoring, documentation (e.g. maintenance logs), and management including revegetation, watering, integrated pest management (IPM), and other tasks described below. It will follow an adaptive management strategy wherein the management practices are based on clearly identified goals (performance criteria), monitoring to determine if management actions are meeting goals, and, if not, facilitating management changes that will best ensure that goals are met or re-evaluated[1]. Attachment A is a maintenance checklist for use by the Contractor as a guide to maintenance tasks and frequencies throughout the project area. Figure 1 depicts the four maintenance areas defined by the scope.

1. Pershing Drive Urban Trail Area: This area extends from Manor Road through the Stream Restoration Area to Pershing Drive. It includes the swale adjacent to the urban trail and associated urban trail street trees and re-vegetated turf areas. The Extended Landscape Maintenance Period for the Pershing Drive Urban Trail Area will be three years in duration.

2. Denver Rain Garden and Greenwood Rain Garden Area: Two rain gardens will be constructed as part of this project: one at the intersection of Pershing Drive and Greenwood Avenue, and the other at the intersection of Pershing Drive and Denver Avenue. The Extended Landscape Maintenance Period for the Rain Gardens Area will be three years in duration.

3. Stream Restoration Area: The Stream Restoration Area extends from an existing culvert on the south side of Denver Avenue to an existing culvert on the north side of E. Martin Luther King Jr. Boulevard. It includes both sides of Tannehill Branch – Tributary 1 within the J.J. Seabrook Greenbelt. This area will be encompassed by a “Grow Zone”, an approximately 60-foot-wide buffer extending 30 feet on either side of the stream centerline, the boundary of which is shown on the landscape plans. The Extended Landscape Maintenance Period for the Stream Restoration Area will be five years in duration.

[1] Source: United States Department of Interior Bureau of Land Management, 2008 *Integrated Vegetation Management Handbook*

4. Park Trail Area: A five-foot-wide crushed granite trail is also part of this project (Figure 1), including revegetation with Bermudagrass of all areas immediately adjacent to the trail disturbed by construction. Revegetation may require supplemental water and minimal maintenance (e.g., mowing) until establishment[2] and may be included in the Extended Landscape Maintenance Period if grass establishment does not occur before substantial completion. Once the grass is established as approved by the Landscape Architect, the City of Austin Parks and Recreation Department will resume maintenance of this area.

[2] Established turf grass is healthy, viable, fully rooted grass achieving 95% coverage and at least 2 ½ inches tall.

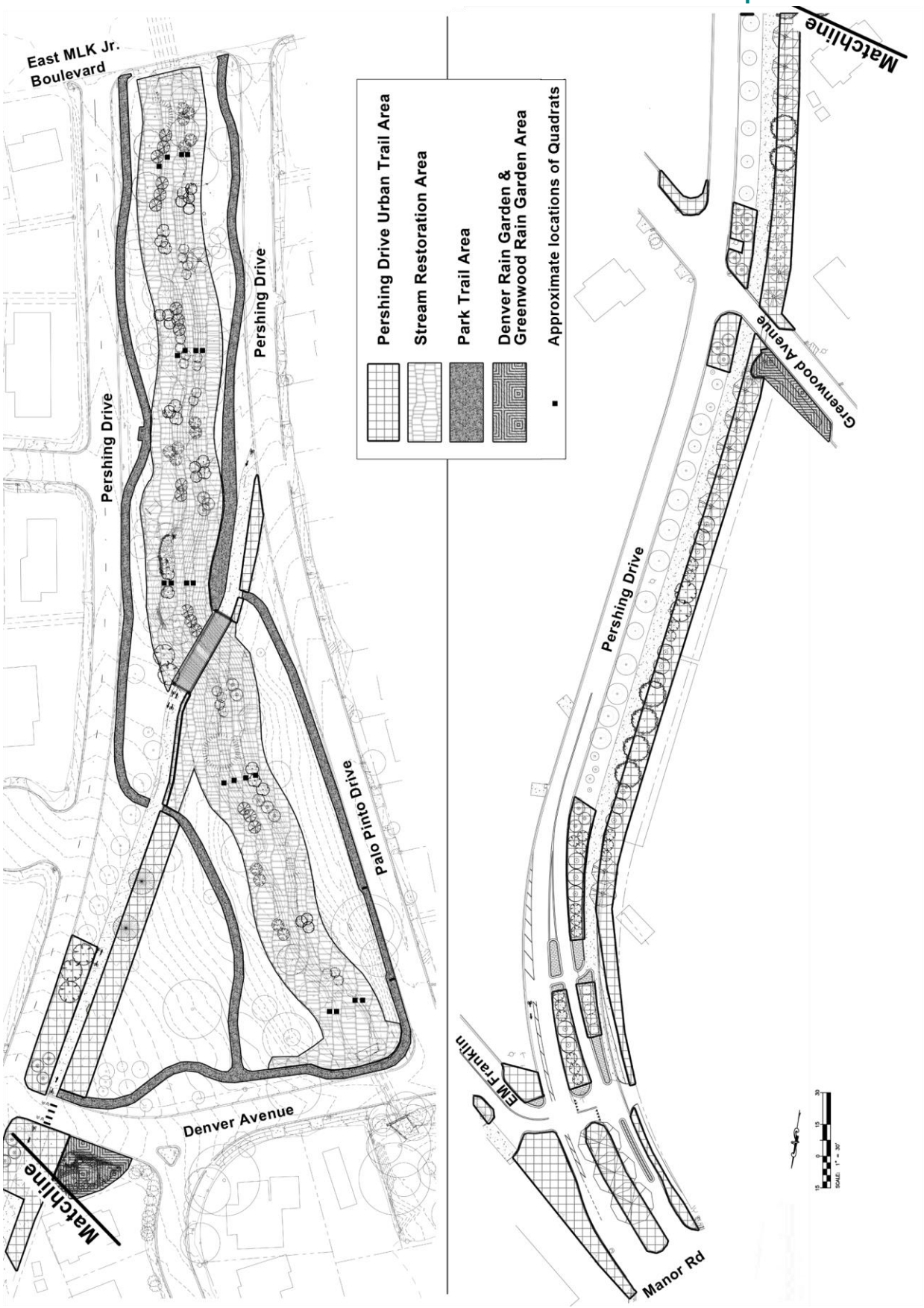


Figure 1: Project Areas

B. Related Documents

The general provisions of the Contract, including General Conditions, Supplementary Conditions and Special Conditions, if any, apply to the work specified in this section.

1) These specifications relate to the installation phase (described in Item Numbers 601S, 602S, 603, 604S, 606S, 608S, 609S, and 610S, and their Special Provisions, as well as Special Specifications 603 and 612), and to the following maintenance phase as required.

2. Attachment 'A' –Landscape Maintenance Checklist found at the end of this section.

611.2 Submittals and Inspections

The submittal and inspection requirements of this specification item shall include the following:

A. Submittals

The submittal requirements for this specification shall include:

1. Before commencement of Extended Landscape Maintenance Period (per 611.1):

a) The Restoration Contractor (hereafter Contractor) shall have a kickoff meeting with the Project Landscape Architect (hereafter Landscape Architect) to discuss intent of the Extended Landscape Maintenance program and the scope of work based on the list of tasks and general frequencies listed in Attachment 'A'. The Contractor is then responsible for providing the Landscape Architect with a written schedule of anticipated monthly tasks for the first-year maintenance, including seasonal watering schedule before start of the Extended Landscape Maintenance Period, subject to approval. Recognizing the vagaries of weather the maintenance schedule may be revised, but any proposed change to the maintenance schedule shall be submitted in writing to, and approved by, the Landscape Architect at least 48 hours before proposed change becomes effective. No action related to the proposed change shall commence before the Landscape Architect approves the proposed change in writing. Maintenance schedules for each subsequent year shall follow a similar submittal and approval protocol.

b) For pesticides and fertilizers provide specific information for each product, including: product name; manufacturer; description of chemical composition; handling, storage and mixing requirements; application recommendations; and MSDS sheets. For all pesticide applications the Contractor shall submit a Pesticide Application Tracking Log at least twice yearly (Attachment B).

c) Current certificates of licensed individuals from their respective licensing boards:
   i) TCEQ licensed irrigator and technician;
   ii) Texas Certified Landscape Professional (TCLP);
   iii) Certified arborist;
   iv) Texas Department of Agriculture – Structural Pest Control Service, Certified Applicator.

d) Irrigation Seasonal Watering Schedule
Per State of Texas code (Title 30, Texas Administrative Code, Chapter 344, Rules for Landscape Irrigation) the Contractor is responsible for providing a seasonal

watering schedule to the Landscape Architect. The schedule shall be a chart listing zone number, zone flow (gpm), run time (minutes/month), type of vegetation irrigated per zone (e.g., trees, bunch grasses), and type of emission device per zone (e.g., bubblers, rotors). The irrigation schedule may be adjusted according to seasonal weather conditions, watering restrictions, and other project or site-related conditions.

d) Any proposed revisions and/or additions to Attachment 'A' – Landscape Maintenance Checklist.

2. During the Extended Landscape Maintenance Period:

a) Any proposed change to the maintenance schedule shall be submitted in writing to the Landscape Architect and approved by the Landscape Architect at least 48 hours before proposed change becomes effective. No action related to the proposed change shall commence before the Landscape Architect approves the proposed change in writing.

b) Watering schedules for years two through five for the Channel Restoration Area and years two through three for the Pershing Drive Urban Trail Area and the Denver Rain Garden and Greenwood Rain Garden Area shall be submitted before the beginning of each year. The Contractor can revise watering schedules at any time during the year to respond to vagaries of weather and the mandates of Austin Water Utility regarding watering restrictions subject to prior approval at stated in 2.a.

c) The Contractor shall keep and provide a copy of monthly maintenance logs to the Landscape Architect detailing all maintenance activities throughout the maintenance period. The Contractor shall submit a completed copy of the log to the Landscape Architect within 10 days following the end of each month that maintenance occurs.

d) The Contractor shall prepare as-built record drawings to track revegetation in the Stream Restoration Area only. The Contractor shall also keep written notes to document any changes to the landscape plan in the Stream Restoration Area. These documents shall be kept and updated through the Extended Landscape Maintenance Period to track replacement plantings and additional plantings. A summary table describing the number and species of plants replaced shall be kept as part of the written notes, and shall follow the example shown in Table 1. The as-built record drawings shall be updated monthly or as needed as a redlined set of construction drawings and be made available to the Landscape Architect upon request.

Table 1. Example of Summary Table for Replacement Plants

Date	Stn #	Plant to be Replaced (botanical name)	Qty	Replacement Plant (botanical name)	Container Size	Notes
11/13/XX	4+50 to 4+60	*Ptelea trifoliata*	5	*Prunus rivulus*	5 gal	Replaced due to mortality with different species after discussion with Landscape Architect
12/15/XX	1+75	*Platanus occidentalis*	1	*Platanus occidentalis*	2" caliper	Replaced due to mortality with same species

B. Inspections and Meetings

The inspection requirements for this specification shall include:

1. Kickoff Meeting

   A kickoff meeting shall be set between the Contractor and Landscape Architect to discuss expectations for work conducted in the Extended Landscape Maintenance Period. The Contractor shall schedule this meeting at least 14 business days in advance of commencement of the Extended Landscape Maintenance Period.

2. Adaptive Management Inspections

   Progress inspections of the Contractor's maintenance activities will be conducted by the Landscape Architect monthly during the first year. Following each inspection, the Landscape Architect will provide the Contractor with a punch list of items to be completed if needed. The Contractor shall correct deficiencies within 15 business days of receipt of a punch list, unless otherwise agreed to in writing by the Landscape Architect. Interim inspections may occur at any time, and any deficiencies will be brought to the Contractor's attention. Following the first year, the inspection interval will be every three months until further notice.

3. Final Walk-Through and Acceptance

   At the completion of the Extended Landscape Maintenance Period, the Contractor shall schedule a final walk-through with the Landscape Architect to evaluate the acceptability of the defined areas. The walk-through shall occur 15 business days before the end of the three year maintenance period for the Pershing Drive Urban Trail Area and the Denver Rain Garden and Greenwood Rain Garden Area, and 15 business days before the end of the five year maintenance period for the Stream Restoration Area. If necessary, the Landscape Architect will develop a punch list of items to be completed by the Contractor before final acceptance. The Contractor shall complete the punch list items within 15 business days of receipt of the punch list unless otherwise agreed on in writing by the Landscape Architect. The Contractor shall repair or replant any areas determined to be unacceptable by the Landscape Architect. The Contractor shall be responsible for any resulting extension of the contract period resulting from deficiencies identified during the final walk-though and shall do so at no additional cost to the City of Austin. Corrected deficiencies will be re-inspected and approved by the Landscape Architect. Final acceptance will be granted upon satisfactory completion of the punch list items.

611.3 Materials

Contractor shall provide all equipment and materials necessary to complete work in all areas of the project. Materials shall include water, watering equipment and items necessary for vegetation management, and for weed and pest control, as well as replacement plants.

A. Water

Water shall be clean and free of substances harmful to the growth of plants. Source of supplemental water may be potable or non-potable (e.g., stream, lake, reclaimed water) as long as the supply is readily available and dependable. Refer to SS-603.

B. Watering Equipment

By the time the Extended Landscape Maintenance Period commences a fully functional temporary irrigation system shall already be in place. The Contractor is responsible for ensuring that the system remains fully functional throughout the contract period. Refer to SS-603.

C. Pesticide

Pesticide (including herbicide) applications might be necessary to control competition by non-native plant species that is not sufficiently addressed by other forms of removal (e.g., hand pulling). The Contractor shall consult with, and obtain written approval from, the Landscape Architect on use of pesticide before use, providing specific information for each pesticide, including: product name; manufacturer; description of chemical composition; handling, storage and mixing requirements; application recommendations; and MSDS sheets. Any herbicide proposed for use in the Stream Restoration Area must be approved for aquatic applications. Pesticide use is prohibited in the rain gardens.

D. Mulch

Mulch used during this period of the project shall conform to the type, aerial extent, and thickness as installed initially and as referenced in the landscape plans.

E. Fertilizer

Fertilizer shall conform to City of Austin SP606S, “Fertilizer.”

F. Tree Stakes & Guys

Tree stakes and guys shall conform to City of Austin SP608S, “Planting.”

G. Maintenance Equipment

The Contractor shall provide all equipment required to complete work.

611.4 Maintenance Methods

The maintenance methods described herein shall be applied to the areas described in Section A. *Scope of Work*, although emphasis in this document is given to the stream restoration area as restorations of riparian areas can be difficult and time consuming. Although emphasis hereafter is on the stream restoration area, similar maintenance practices and techniques shall be employed in all areas of the project, following maintenance materials and methods detailed in SP608S and initiated during the interim maintenance period preceding onset of substantial completion. Any questions about maintenance materials and methods to be employed shall be promptly referred to the Landscape Architect.

Channel Stream Restoration Area: History/Background

Existing conditions of the vegetative community along Tannehill Branch – Tributary 1 in the J. J. Seabrook Greenbelt is dominated by obligate and facultative wetland vegetation and a biological community that indicates inundation for a significant portion of the year. The herbaceous vegetation of the streambed included marsh seedbox (*Ludwigia palustris*), water

penny-wort (*Hydrocotyle* sp), flat sedge (*Cyperus* sp), and spikerush (*Eleocharis* sp), among others. Woody vegetation includes bald cypress, black willow, mulberry, and others. Upslope of the channel the vegetation was dominated by mown turfgrass, annual and perennial weeds and wildflowers (e.g., verbena, Missouri primrose), understory (e.g., Mexican buckeye, Mexican Plum) and shade trees (e.g., cedar elm, oaks), and bald cypress.

As defined in the plans, post-construction conditions in the riparian zone[3] will include a 60-foot-wide "Grow Zone", defined roughly as 30 feet from the center of the channel on both sides. A "Grow Zone" typically receives less intensive maintenance and no mowing, with the aim of increasing and allowing natural, self-sustaining native plant growth and succession in the riparian zone. The City of Austin Watershed Protection Department (WPD) has an agreement with the Parks and Recreation Department (PARD) to establish "Grow Zones" in creek side areas throughout Austin, including the J.J. Seabrook Greenbelt. For the purposes of weed management, selective and limited mowing shall be permitted in the Grow Zone boundaries during plant establishment, following guidelines set forth below. Once preferred plant establishment occurs, as decided by the Landscape Architect, mowing shall cease within the Grow Zone.

Channel Stream Restoration Area

A. Site Monitoring, Performance Criteria, and Vegetation Management

The Landscape Architect will visit the entire project site regularly (ref. SS611.2.B) to assess and determine the relative success of the landscape restoration. During each site visit, the Landscape Architect will prepare recorded (written and photographic) observations documenting the relative success of the landscape to meet the performance criteria stated under Section A.1. *Performance Criteria*. As part of the assessment, the Landscape Architect will prepare recommendations for continuing or modifying the stated vegetation establishment strategy. Tasks to be evaluated are included in Attachment 'A' of SS611. Attachment 'B' is a pesticide log. Attachment 'C' is a quadrant data sheet that will be used to track revegetation.

1. Performance Criteria for the Pershing Drive Urban Trail Area

Proposed plantings in this area comprise turf grass seed and sod, as well as ornamental and shade trees, and associated materials (e.g. hardwood mulch) in medians and areas adjacent to the Pershing Drive Urban Trail and associated drainage swale.

For the three year maintenance period, all turf grass areas shall be maintained at 95% coverage, with no bare areas greater than 16 s.f., and shall be at least 2 ½ to 3 inches high, with no turf grass cut shorter than 1 ½ inches, from April to October as warranted by turf growth (height). Contractor shall not use string trimmers to cut turf grass except where edging is required adjacent to curbs, around utility boxes, poles or other such structures. Mow and trim in such a manner that grass cuttings are not blown onto paved areas. Heavy cuttings shall be removed to prevent damage to underlying turf. Weeds or other undesirable vegetation which threaten health of the turf shall be uprooted and removed or treated with herbicide if tenacious. Turf grass shall be irrigated during the three-year Extended Landscape Maintenance Period to maintain a vigorous and healthy condition.

[3] The riparian zone is the transition area between the aquatic environment in the creek channel and the terrestrial environment outside the channel.

All trees shall be maintained in a vigorous and healthy condition through the Extended Landscape Maintenance Period. Prune for tree health and remove dead or damaged limbs. All tree stakes and guys shall be removed after one year. Mulch rings shall be maintained at the minimum size and depth stated in the landscape plans. Irrigation shall be maintained for the entire three-year Extended Landscape Maintenance Period.

In the swale, repair erosion and channelization immediately by adding soil where needed and replacing damaged vegetation. Excessive sedimentation, trash and debris shall be removed from the swale before it hinders downstream flow. The swale should drain freely into downslope rain gardens, with no areas of water standing more than 48 hours once inflow has ceased.

2. Denver Rain Garden and Greenwood Rain Garden Area

Proposed plantings in this area comprise turf grass sod, small trees, shrubs, perennials, groundcover, and associated materials (e.g., gravel “mulch”).

Follow 611.4.A.1 for performance criteria for turf grass and trees.

Repair erosion and animal burrows immediately, adding soil where needed and replanting the impacted area. No bare areas greater than 10 s.f. are allowed in rain gardens. Mulch or gravel for soil stabilization shall be maintained at the specified depths throughout the extended maintenance period.

The Contractor shall remove accumulations of sediment and trash before they become unsightly or impede rain garden function by blocking an inlet or flow splitter, impacting drawdown time, or having an aerial extent greater than 10 s.f. or 5% of the surface area. After removal of excessive soil accumulation, replant or add mulch to the impacted area.

The Contractor shall remove and replace dead plants in the spring or fall. Contractor shall prune excess growth for purposes of plant health or if excessive growth impedes water flow through rain garden. Hand-remove invasive plants and weeds during regularly scheduled visits; pesticides are prohibited in water quality features.

The Contractor shall regularly irrigate all plants in rain gardens to maintain plant health for the entire three-year Extended Landscape Maintenance Period unless otherwise directed by Landscape Architect. Once established, plants should only require water during drought conditions.

3. Performance Criteria for the Park Trail Area

Areas immediately adjacent to the Park Trail which are impacted by trail construction shall be planted with Bermudagrass (hydroseeded), except as indicated on the landscape plans. Revegetation may require supplemental water and minimal maintenance (e.g., mowing) until establishment and may be included in the Extended Landscape Maintenance Period if establishment of the grass does not occur before substantial completion.

As no in-ground temporary irrigation is proposed for this area, the Contractor shall provide supplemental water to this revegetation effort with a water truck. Water truck irrigation shall be provided to areas adjacent to streets only. Driving of heavy vehicles inside the greenbelt shall be prohibited after planting is completed.

For purposes of this contract, work shall terminate along the park trail when the turfgrass is established to 95% coverage at 2 ½ inches tall. At this time, maintenance will be resumed by the City of Austin Parks and Recreation Department.

4. Performance Criteria for the Stream Restoration Area

Proposed plantings in the Stream Restoration Area comprise trees, shrubs, perennials, groundcover, turf grass sod, and associated materials (e.g., hardwood mulch). Most plants will be nursery- or commercially-grown container plants, plugs, live roots, or seed, although some native emergent plants salvaged from the site before construction may be included depending on market availability of these plants or need to augment plantings along the channel.

The Stream Restoration Area comprises four main zones of vegetation starting at the toe of the channel and extending upslope: Emergent Plant Zone, Wetland Fringe Zone, Bunch Grass Zone, and Blackland Prairie Zone (see landscape plans for zone delineation).

To evaluate and determine the success of the vegetation establishment efforts in the Stream Restoration Area, the performance criteria in the following sections shall be attained in each of the defined zones. A quadrat measurement methodology is proposed to quantify vegetation performance.

Quadrat Measurement Methodology:

The quadrat methodology employs a defined, fixed square area or plot (see below) within which plant characteristics are measured as a means to obtain a representative sampling of a larger area, in this case the Stream Restoration Area. For this project, the plant characteristics shall include native plant coverage[4]; native plant species diversity; and non-native invasive plant coverage, all expressed as percentages of cover or surface area within a quadrat. Figures 2 - 5 show quadrat measuring with examples of various levels (%) of coverage, plant type and diversity. Quadrat locations shall be established every 200 feet, on both sides of the stream, starting at station 1+50, in each of the Emergent Plant/Wetland Fringe and Blackland Prairie zones as discussed below. Figure 1 shows approximate locations for the quadrats. The Contractor and Landscape Architect shall meet on-site to determine the exact quadrat locations, establishing permanent points at which the frame will be set at each evaluation.

Figure 2: Quadrat with 95% coverage of non-native plants

Figure 3: Quadrat with 40% coverage of non-native plants, 60% bare ground / leaf litter

Figure 4: Quadrat with 100% coverage of native plants.

Figure 5: Quadrat with 65% coverage of native plants, 25% bare ground / leaf litter

[4] Cover is defined as percentage of vegetation covering the ground inside the quadrat.

a) Emergent and Wetland Fringe Zones

Within any 3-ftx3-ft-square quadrat area within the Emergent and Wetland Fringe zones the following coverage and species diversity criteria apply.

Table 2. Five-year Target coverage and diversity rates for the five-year extended maintenance period in the Emergent and Wetland Fringe zones.

	Stream Restoration Area: Landscape Extended Maintenance Period Performance Criteria Target Values in the Emergent and Wetland Fringe Zones				
Vegetation Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Native Plant Coverage	20 - 40%	30 - 60%	50 - 65%	60 - 75%	75 - 80%
Native Plant Species Diversity	No one species should be the dominant species in more than 20% of all the quadrats				
Non-native invasive plant coverage [5]	Non-native plants occupy more than 5% of any quadrat area				

The preferred native species within these two zones are those listed in the proposed plant list on the landscape plans, including the proposed seed mixes. However, native species endemic to these zones but that are not on the proposed plant list, and that appear here naturally, may count for the coverage and species diversity requirements.

b) Blackland Prairie Zone

Within any 9-ftx9-ft-square-foot area in this zone the following coverage and species diversity criteria apply.

Table 3. Five-year Target coverage and diversity rates for the five-year extended maintenance period in the Blackland Prairie Zone.

	Stream Restoration Area: Landscape Extended Maintenance Period Performance Criteria Target Values in the Blackland Prairie Zone				
Vegetation Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Native Plant Coverage	At least 30-50%	At least 50-65%	At least 60-75%	At least 70-80%	At least 75-85%
Native Plant Species Diversity	No one species should be the dominant species in more than 20% of all the quadrats				
Non-native invasive plant coverage [2]	Non-native plants occupy more than 5% of any quadrat area				

[5] Invasive plant list is in SP608S

The preferred native species within this zone are those listed in the proposed plant list on the Drawings, including the proposed seed mixes and associated seed lists from the grower. However, native species endemic to this zone but that are not on the proposed plant list, and that appear here naturally, may count for the coverage and species diversity requirements.

c) Bunch Grass Zone

Container bunch grasses will be installed along the entire stream restoration corridor per the landscape plans. The performance criterion for the installed grasses is a minimum of 75 percent survival after five years across the Stream Restoration Area.

d) Trees and Shrubs in the Stream Restoration Zone

Trees and shrubs are proposed to be planted throughout the Stream Restoration Area, scattered throughout the previously mentioned zones. The performance criterion for the installed trees and shrubs is a minimum of 75 percent survival after five years across the Stream Restoration Area. Across the entire Stream Restoration Area no one tree or shrub species should constitute more than 20 percent of the total tree or shrub population.

Through the adaptive management process and discussion between the Contractor and Landscape Architect, target values for years one through five may be reassessed and revised, recognizing that native seeds do not germinate or achieve establishment like a traditional crop seed. Anticipated coverage and diversity may be challenging during Year one; patience and flexibility may be required.

B. Tasks

Various tasks will be required to meet the aforementioned performance criteria, including plant watering/irrigation, Integrated Pest Management, mowing, re-seeding, additional plantings, debris and litter removal. Many of the tasks involved in the Extended Landscape Maintenance Period will be a continuation of those begun during interim maintenance undertaken before substantial completion.

1. Plant Watering and Irrigation

Many mature native plants are adapted to dry conditions, although their seeds will not germinate and immature plants will not recover from transplant shock and thrive without sufficient water. A fully functioning irrigation system for this project shall be in place before substantial completion and shall be kept in good working order during the extended maintenance periods. The Contractor shall inspect the irrigation system frequently to ensure proper functioning and repair any defects immediately. Failure to sufficiently water installed plant materials is unacceptable as is over-watering.

After the first year of the Extended Landscape Maintenance Period in the Stream Restoration Area only, supplemental irrigation may be reduced to perhaps summer months only. Reduction of irrigation of native plants should occur as soon as feasible to encourage plant materials to harden and acclimatize to reduced watering. The Contractor and Landscape Architect shall plan for and implement irrigation reduction during year three at the latest, weather permitting.

Irrigation for the Pershing Drive Urban Trail Area and the rain gardens shall be kept operational for the three-year extended maintenance period. Irrigation for the Streambank Restoration Area shall be kept operational for the five-year extended maintenance period to permit supplemental watering during drought.

The Contractor shall monitor all plants for signs of wilting, defoliation or other signs of drought-stress in all areas. The Landscape Architect may, at his or her option, change the requirement for scheduled watering upon written request. Between scheduled watering events, the Contractor shall provide supplemental water to plants when so directed by the Landscape Architect, particularly when plants are dry and exhibit signs of water stress.

At the end of the three- and five-year extended maintenance periods, contact the Landscape Architect to assess final removal of the irrigation system. For bidding purposes, assume that Contractor shall remove all visible portions of the system and restore disturbed areas. Note that Special Specification 603, "*Irrigation System (Temporary)*", covers the work of temporary irrigation.

2. Integrated Pest Management (IPM)

For the purposes of this specification, weeds include species listed in Tables 1 and 2 of SP608S, in the City of Austin Invasive Species Management Plan, or any plant deemed undesirable by the Landscape Architect.

IPM strategies shall include management of weeds (including woody species), insect pests, plant diseases, and other horticultural pests. Implement pest management strategies according to City of Austin IPM guidelines and Grow Green publications. The employed methods are dependent on location of weeds and time of year.

Weed control shall include hand-pulling, hand tools, mechanical removal (e.g., mower, weed trimmer), and herbicide application as described below. Care shall be taken around installed plants and native plant volunteers/recruits to avoid damaging them during weeding. No mechanical removal shall occur within a planting basin or within two feet of a native seedling/recruit.

The difficult process of controlling weeds necessitates continual vigilance and frequent site visits during the extended maintenance period. Weed control is especially critical to the success of the riparian revegetation. Weeding and invasive plant removal will have commenced immediately after plant installation, including all hydroseeded areas, before substantial completion and shall continue through the extended maintenance period.

The Contractor shall remove noxious weeds according to the following guidelines:

a. Weeds shall be removed before they set seed. Annual weeds must be physically removed unless there are extensive stands, in which case herbicide may be used. Weed removal by hand may occur after either rainfall or irrigation has moistened the ground to facilitate easy of pulling. When hand-weeding, the entire root system of the weed shall be removed.

b. It is preferred that woody weeds be manually removed by the roots. Woody plants that cannot be eradicated using physical methods are candidates for chemical control. Application methods include cut stump treatment, foliar application, hack-and-squirt

method, or basal bark treatment. The particular application method shall be based on site conditions, efficacy and related IPM approaches. Woody material regarded as waste shall be removed from the site and managed responsibly (e.g. preferably turned into mulch).

c. Chemical control of weeds may be allowed in the following situations:
   a) In areas where weeds are too numerous to be removed by hand.
   b) Hard-to-kill perennial weeds are present and physical removal is unlikely to provide effective control. The Contractor shall propose an appropriate product to be reviewed and accepted by the Landscape Architect.

d. In situations when herbicides are proposed for use, use appropriate care and employ the following guidelines:
   i) Never allow the herbicide to contact any watercourse on-site.
   ii) Never spray when the wind is greater than 8 mph.
   iii) Never apply herbicide when rainfall is imminent.
   iv) Apply with a wick where a mixture of weeds and desirable vegetation is present, or when local weather conditions preclude spray application (i.e. during windy conditions).

3. Mowing

Mowing can be an effective vegetation management method. In this contract, mowing may be used to maintain turf restoration in the Pershing Drive Urban Trail Area, turf in the Greenwood Rain Garden, turf margins around the Denver Rain Garden, the buffalograss associated with the Storm Drain C Retrofit in the Stream Restoration Area (see landscape plans), and the Blackland Prairie Zone in the Streambank Restoration Area. Turf shall not be mowed with string trimmers. Refer also to Special Provision 608S for information on mowing.

Bermudagrass restoration areas may be mowed monthly or as needed from April to October following the grower's recommendation on maintenance. Bermudagrass turf shall not be mowed shorter than 1-1/2 inches; no scalping is permitted.

Buffalograss should be mowed occasionally after establishment to no shorter than 3 inches. Mow at least once per year to ensure turf health in late winter before new growth begins.

Upper bank areas of the Stream Restoration Area shall be vegetated with a native grass-wildflower mix dominated by Blackland Prairie species. Strategic mowing in these areas for two to three years after planting may assist native plant succession and weed control since burning and grazing, regenerative activities normally associated with prairie grasslands, cannot be employed in this urban environment. Typically, mowing should only be done in the late fall or early winter after seeding of native plants is complete and in early spring after weed species flower but before they set seed. The Contractor must consult with the Landscape Architect on any and all mowing proposed within the Grow Zone. Once an acceptable complement of species has been established within three to five years, mowing should be phased out of long-term maintenance as determined by monitoring vegetation success. Care should also be taken during mowing to avoid desirable native shrub and tree volunteers which should be protected from maintenance practices by cages, etc.

No mowing shall occur in the Emergent Plant, Wetland Fringe, or Bunch Grass zones.

4. Plant Survival, Replacement Planting, and Plant Warranty

Plant survival and other performance criteria are stated for the various project areas above. Standard Specification 608S and its special provisions provide instruction and information on plant replacement, and warranty.

Tree and shrub replacement during the Extended Landscape Maintenance Period should occur only between November 1st and March 15th to avoid failed establishment during the summer.

5. Re-seeding and Inter-seeding

Revegetation using native seed requires patience. During the first few years native seed revegetation areas tend to be dominated by tall grasses and easily established composites, with diversity increasing temporally. Some species in the specified native seed mix may not germinate in the first year, waiting for favorable conditions for seed-set, and germination. During site monitoring and the adaptive management process the project landscape may require the Contractor to reseed or inter-seed bare areas or patchy areas of native vegetation with the specified seed mix or a seed mix proposed by the Contractor for acceptance by the Landscape Architect. Inter-seeding involves broadcasting seeds in areas of existing vegetation, without extensive cultivation. If required, this work shall be done in the fall of the 2nd, 3rd, and 4th growing seasons. Mechanical broadcasting or hydromulch are unlikely for re-seeding or inter-seeding unless large areas of bare soil are present.

6. Other Additional Plantings in the Stream Restoration Area

Through monitoring and the adaptive management process, the Landscape Architect may determine that additional plantings are warranted to enhance revegetation in the Stream Restoration Area. These plants may include seedlings, live cuttings, and salvaged emergent and aquatic plants, among others, to be installed by City of Austin personnel. The Contractor will not be accountable for replacement of such plants but is responsible for showing these plantings on the as-built drawing and for taking all precautions to ensure their survival.

7. Debris and Litter Removal

The Contractor shall maintain the project area in a natural-looking condition throughout the maintenance period. All garbage, debris, discarded materials, and extraneous equipment shall be removed and stored or disposed of offsite in accordance with state and local regulations. One exception is that fallen woody material in the Stream Restoration Area shall not be removed from the project site unless deemed by the Owner to pose a threat to public safety, promote excessive erosion or flooding, or to damage installed project elements (e.g., irrigation, plants, instream structures).

611.6 Measurement

Measurement of this item shall be one lump sum per year, pro-rated on a monthly basis, and shall include the acceptable and completed work of this specification. Measurement shall not include temporary irrigation system and watering. Work is considered acceptable when the vegetation indicated in the documents, to the percentages of coverage and diversity indicated in the documents, is complete and in place.

611.7 Payment

The work performed will be paid for as defined in Section 1020, Allowance, and shall be full compensation for furnishing all materials and for performing all operations necessary to complete the work. The Allowance shall exclude payment for temporary irrigation system and watering, which are subsidiary to Item No. SS-603.

END

ATTACHMENT A TO SS611 – LANDSCAPE MAINTENANCE CHECKLIST

This checklist is provided as a guide for the Contractor and may not be inclusive of all required maintenance activities. Contractor is responsible for providing a written schedule of anticipated monthly tasks to the Landscape Architect for review and acceptance. The gray shaded cells on the checklist denote tasks not applicable to a particular area.

Area					
PDT	RG	PT	SRA	MAINTENANCE TASKS	FREQUENCY
				Prune any trees, shrubs or groundcover overhanging curbs or sidewalks	As needed
				Prune excessive growth or for plant health	Annually[1]
				Remove any branches that have fallen from trees[2] and sucker growth from tree trunks; prune branches that are threat to public safety	As needed
				Remove and eradicate weeds through mechanical and/or chemical means. Pay special attention to SRA to ensure weeds do not hinder growth of native species. Hand pull weeds in rain gardens (pesticides are prohibited in RG).	Monthly, April-October[3]
				Check plants for signs of stress or disease	During regular maintenance visit
				Replace dead or missing plants	Annually, fall or early spring
				95% living vegetation is required in PDT, RG & PT. Replace dead plants to maintain coverage.	Annually
				No bare areas > 10 s.f. in RG and > 16 s.f. in PDT & PT. Replant or mulch to cover bare soil.	Annually
				Treat plants exhibiting any signs of disease or pest infestation	As needed
				Irrigate new plant installations per watering variance and per seasonal watering schedule. Zone run times are based on plant type[4], soil type, slope, sun-shade exposure, etc.	Weekly Apr.-Oct.
				Hand water any plants that are dry and stressed between regularly-scheduled irrigation events	Weekly as needed Apr. – Oct.
				Check the irrigation system for proper function, performance, coverage, and leaks. Repair immediately as needed.	Weekly during irrigation season
				Check batteries in all battery-operated irrigation components	Monthly during irrigation season
				Clean y-type strainers on double check backflow prevention assemblies annually	Annually
				Clean filters on drip irrigation systems, if used	Annually (min.)
				Flush the irrigation system as needed before first seasonal use	Early spring
				Winterized irrigation system at end of irrigation season	Late fall-early winter
				Adjust irrigation controllers for monthly water needs or per City mandated restrictions in run times and days	Monthly during irrigation season

Area					
PDT	RG	PT	SRA	MAINTENANCE TASKS	FREQUENCY
				Mow bermudagrass turf to no shorter than 1-1/2 inches	Monthly Apr.-Oct.[5]
				Mow SRA buffalograss turf to no shorter than 3 inches	At least once/yr in late winter before new growth[6]
				Mow Blackland Prairie Zone (selectively for weed control & to replicate plant disturbance regime to encourage regeneration)	2-3 times during first growing season, spring & fall[7]
				Overseed or interseed	Fall of 2nd, 3rd & 4th growing seasons, as necessary
				Treat fire ant mounds	As needed
				Repair erosion and animal burrows immediately. The project Engineer will direct erosion repair in the SRA.	As needed
				Check rain gardens & Pershing Drive Urban Trail swale for signs of clogging, water standing over 48 hours – notify project Engineer	After rain events
				Remove accumulation of sediment, debris, and trash from rain garden inflow devices, flow splitters/spreaders, and outlets	Monthly or after large rain events
				Remove accumulation of sediment, debris, and trash from Urban Trail swale to allow free flow of water down the channel	Monthly or after large rain events
				Replace mulch when specified depths are not being met	Annually - spring
				Remove litter and trash from the site, including dead birds and animals	During regular maintenance visits
				Check and repair tree stakes & guys. Remove all tree stabilization after one year	During regular maintenance visits
				Check and repair boundary (e.g., fencing) at Grow Zone if present	As needed
				Submit all required maintenance logs	Ongoing

PDT = Pershing Drive Urban Trail Area
PT = Park Trail Area
RG = Denver and Greenwood Rain Gardens Area
SRA = Stream Restoration Area

ATTACHMENT A TO SS611 – LANDSCAPE MAINTENANCE CHECKLIST

Notes:

[1] Prune trees & shrubs annually before bud break. Deadhead herbaceous plants as required for plant health. If requested by Landscape Architect, trim bunch grasses in early spring or before new growth appears, but not more than 2/3 of plant should be cut.

[2] Fallen wood should not be removed from the Stream Restoration Area unless deemed by the project engineer to be a threat to public safety.

[3] Using adaptive management, the frequency and type of weed management may be revisited in years 2-5 of the Extended Landscape Maintenance contract as determined through discussion between the Contractor and Landscape Architect.

[4] Buffalograss should get 1”-1.5” water/week.

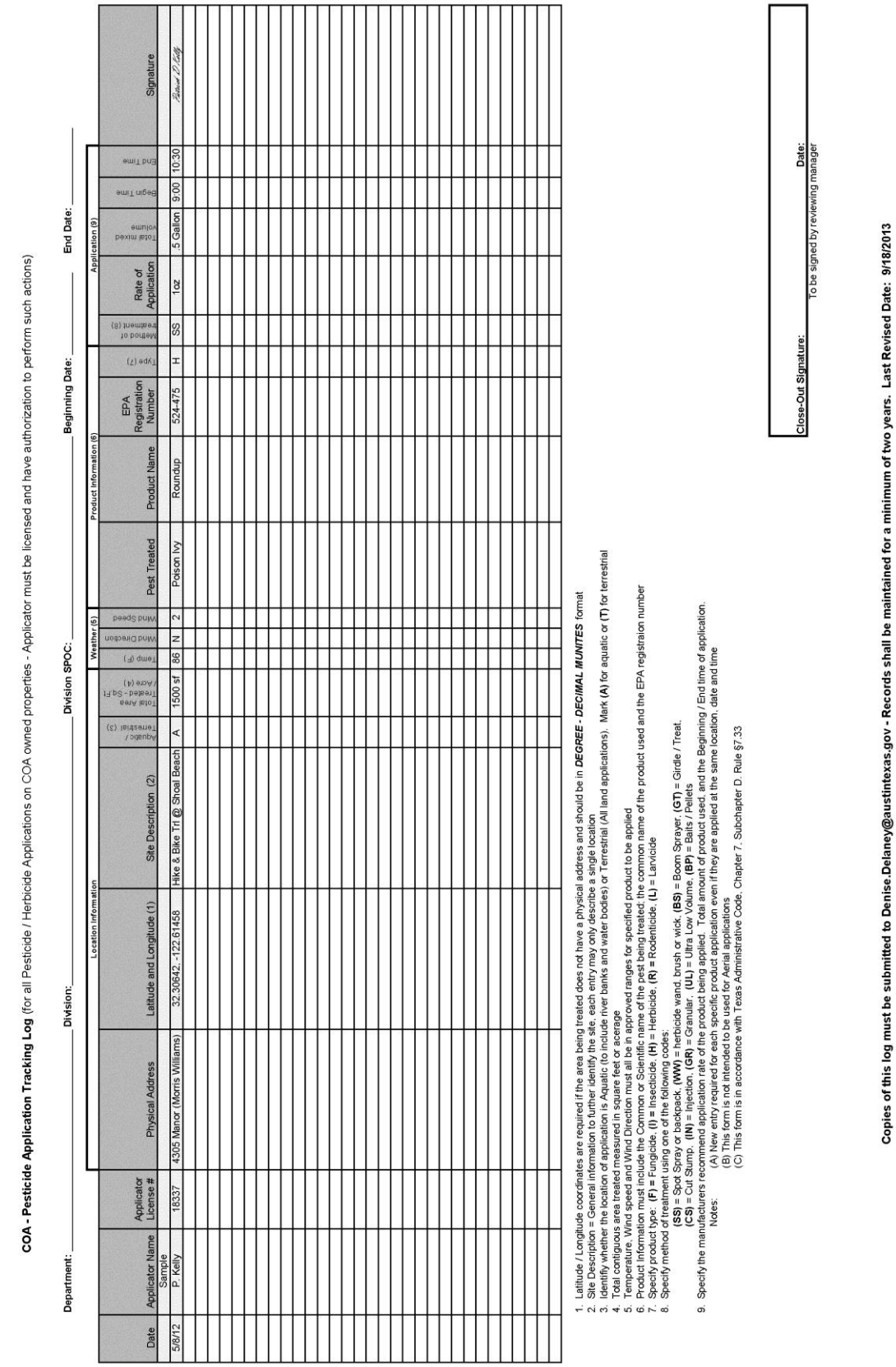
[5] Number of mowing events is related to the weather (rain quantity, temperature) and rapidity of grass growth. Frequency of mowing may be negotiated between Contractor and Landscape Architect based on adaptive management strategy.

[6] Frequency of mowing may be negotiated between Contractor and Landscape Architect based on adaptive management strategy. It may be necessary to increase frequency to prevent buffalo sod from becoming choked or if height impedes flow downstream of the headwall.

[7] The occurrence and frequency of mowing in the Blackland Prairie Zone during Year 1 is dependent on aerial extent and species of weed infestation. Adaptive management will be used throughout the Extended Landscape Maintenance contract to determine the best maintenance strategies in the Stream Restoration Area.

ATTACHMENT B TO SS611 – PESTICIDE APPLICATION TRACKING LOG

Contractor can contact Landscape Architect for an Excel version of this form.



COA - Pesticide Application Tracking Log (for all Pesticide / Herbicide Applications on COA owned properties - Applicator must be licensed and have authorization to perform such actions)

Department: _____ Division: _____ Division SPOC: _____ Beginning Date: _____ End Date: _____

			Location Information				Weather (6)			Product Information (6)			Application (9)					
Date	Applicator Name	Applicator License #	Physical Address	Latitude and Longitude (1)	Site Description (2)	Aquatic / Terrestrial (3)	Total Area Treated - Sq Ft / Acre (4)	Temp (°F)	Wind Direction	Wind Speed	Pest Treated	Product Name	EPA Registration Number	Type (7)	Method of treatment (8)	Rate of Application	Total mixed volume	Begun Time	End Time	Signature
5/8/12	Sample P. Kelly	18337	4305 Manor (Morris Williams)	32.30642, -122.61458	Hike & Bike Trl @ Shoal Beach	A	1500 sf	86	N	2	Poison Ivy	Roundup	524-475	H	SS	1oz	5 Gallon	9:00	10:30	

1. Latitude / Longitude coordinates are required if the area being treated does not have a physical address and should be in ***DEGREE - DECIMAL MUNITES*** format
2. Site Description = General information to further identify the site. each entry may only describe a single location
3. Identify whether the location of application is Aquatic (to include river banks and water bodies) or Terrestrial (All land applications). Mark **(A)** for aquatic or **(T)** for terrestrial
4. Total contiguous area treated measured in square feet or acerage
5. Temperature, Wind speed and Wind Direction must all be in approved ranges for specified product to be applied
6. Product information must include the Common or Scientific name of the pest being treated, the common name of the product used and the EPA registraion number
7. Specify product type: **(F)** = Fungicide, **(I)** = Insecticide, **(H)** = Herbicide, **(R)** = Rodenticide, **(L)** = Larvicide
8. Specify method of treatment using one of the following codes:
   (SS) = Spot Spray or backpack, **(WW)** = herbicide wand, brush or wick, **(BS)** = Boom Sprayer, **(GT)** = Girdle / Treat.
   (CS) = Cut Stump, **(IN)** = Injection, **(GR)** = Granular, **(UL)** = Ultra Low Volume, **(BP)** = Baits / Pellets
9. Specify the manufacturers recommend application rate of the product being applied. Total amount of product used, and the Beginning / End time of application.
   Notes:
   (A) New entry required for each specific product application even if they are applied at the same location, date and time
   (B) This form is not intended to be used for Aerial applications
   (C) This form is in accordance with Texas Administrative Code, Chapter 7, Subchapter D, Rule §7.33

Close-Out Signature: _____ Date: _____
To be signed by reviewing manager

Copies of this log must be submitted to Denise.Delaney@austintexas.gov - Records shall be maintained for a minimum of two years. Last Revised Date: 9/18/2013

ATTACHMENT C TO SS611 – VEGETATION QUADRAT DATA SHEET

Date:_____

Project Name:_____

Recorders Name(s): _____

QUAD. NO.	STATION NO.	NATIVE SPECIES (%)	NON-NATIVE SPECIES (%)	COVERAGE (%)

Special Specification 612
Topsoil Mix

612.1 Description

This item shall govern the furnishing and placing of topsoil mix to depths and areas shown on the Drawings or as directed by the Engineer or designated representative.

612.2 Submittals

The submittal requirements of this specification item shall include the test results and soil classification necessary for approval of material as suitable growing medium.

A. Submittals Required Before Construction

1. Current (no more than 90 calendar days before date of submittal) lab analysis report from a State of Texas qualified soil analytical laboratory that clearly demonstrates the proposed material is suitable topsoil mix for plant growth as described below. The tests shall include a particle-size analysis (soil texture), percentage of organic matter, pH, nutrient and micronutrient content, as well as indication of deleterious material, and recommendations on amendments.
2. A notarized statement from the producer of the soil attesting that the mix conforms to this specification.
3. A sample (2-gallon) of proposed planting mix shall be submitted to the Owner or their representative 30 calendar days before installation and be approved before installation. Sample should be labeled including type of material, specification number; name, address, and telephone number of manufacturer or supplier; and address of the location of the source or material stockpile.
4. A description of the location, equipment, and method proposed to mix the material.
5. The samples and analysis reports shall be submitted at the same time.

B. Submittals Required During Construction

1. Delivery tickets indicating type/product name, source and quantities of imported topsoil mix.
2. Written documentation regarding the soil mixing process, including techniques.

612.3 Materials

A. Topsoil shall consist of material that is clean and friable soil capable of supporting plant life, and is free of stones, roots, and any other deleterious materials.
B. Topsoil mix shall be a dark brown to black composted mix with moderate moisture content (40-50% of total weight) of approximately equal proportions of mineral soil and composted yard waste, and inoculated with leaf mold. The topsoil mix shall have been composted together in a static pile for at least 12 months, reaching a temperature of at least 150 degrees for at least 15 days.

After composting, the topsoil mix shall be passed through a 3/8-inch screen to remove larger particles.

C. The mineral soil component of the topsoil shall be an acceptable agricultural, homogeneous material meeting the USDA texture of a loam to sandy loam, with no particles greater than 1/8 inch. High clay content subsoils or soils with redoximorphic features (mottled) are not acceptable.

D. The compost component shall be well decomposed, stable to very stable organic matter source derived from yard trimmings or City approved alternate source. The Carbon/Nitrogen (C/N) ratio shall be less than 25:1 and trace metals test results should "pass". It shall not contain substances toxic to plants and shall not have objectionable odors. It shall not resemble the raw material from which it was derived, and shall be reasonably free of man-made foreign matter.

E. Mix Parameters:

Parameters	Optimal Range	Reported Units
pH	6.1 – 7.9	pH units
% O.M. Humus	4.5 – 7.0	%, dry weight basis
EC Salts	< 6.00*	mmhos/cm
Nitrate (NO_3)	35 - 90	lbs/AC
Phosphate (P_2O_5)	50 - 100	lbs/AC
Potassium (K) H_2O	75-100 (H_2O); 80-125 (CO_2)	ppm
Sodium (Na)	< 100 (H_2O); < 175 (CO_2)	ppm
Calcium (Ca) H_2O	60-120 (H_2O); 300-800 (CO_2)	ppm
Magnesium (Mg) H_2O	13-20 (H_2O); 60-100 (CO_2)	ppm
Zinc (Zn)	3-6	ppm
Iron (Fe)	11-21	ppm
Manganese (Mn)	10-20	ppm
Copper (Cu)	1.2 – 2.4	ppm

* Compost-rich soil mixes should have EC Salts <3.00 mmhos/cm when used as topsoil substitute.

612.4 Construction Methods

A. The topsoil mix shall be protected from all sources of contamination from the supplier's yard to the project site.

B. Areas to receive topsoil mix shall be free of construction debris, refuse, and rocks and earth clods over three inches.

C. The material shall be placed in loose lifts, not to exceed eight inches each lift, and shall be compacted with a water-filled landscape roller. During installation the material shall be protected from other forms of compaction, including equipment and pedestrian traffic, to the extent possible. Storage of construction materials on top of the topsoil mix is prohibited.

D. Where the proposed planting area is compacted the existing soil shall be tilled to a minimum depth of six inches before installation of the topsoil mix. For compacted areas in the critical root zone of trees, scarify to one inch maximum.

E. The topsoil mix should not be placed if the ground is muddy, saturated, or frozen.
F. For work in critical root zones of trees, all work must be done with hand tools (e.g., shovels, rakes).
G. After placing and grading the soil mix, planting should commence as soon as possible to minimize possibility of erosion or further compaction. Erosion and sedimentation control devices following City of Austin guidelines are required until permanent stabilization is achieved.
H. To prevent the compaction of salvaged topsoil, the Contractor shall properly sequence all construction activities, including landscape and irrigation installation, before soil placement. The following activities, among others, shall occur before placing salvaged topsoil:
    Excavation of all tree pits;
    a. Excavation of all tree, large shrub pits;
    b. Installation of trees and shrubs larger the 5-gallon size;
    c. Trenching and installation of subsurface irrigation components;
    d. Avoid travel across areas of placed topsoil or minimize the number of travel routes, to the extent possible. Heavy vehicles shall not be permitted in these areas.

612.5 Measurement

"Topsoil Mix " will be measured by the cubic yard (cubic meter: 1 cubic meter equals 1.196 cubic yards), complete in place, as indicated in the Contract Documents.

612.6 Payment

This item will be paid for at the contract unit bid price for "Topsoil Mix." The unit bid price shall include full compensation for all work specified herein, including the furnishing, hauling, placing of all materials; and for all equipment, tools, labor and incidentals necessary to complete the Work.

Pay Item SS 612-SCI:	Topsoil Mix	Per Cubic Yard
Pay Item SS 612-UT:	Topsoil Mix	Per Cubic Yard
Pay Item SS 612-RG:	Topsoil Mix	Per Cubic Yard

End

SPECIAL SPECIFICATION SS-661
Log Habitat Structures

SS-661.1 Description

This item shall consist of (1) the careful salvage of specific logs from trees targeted for removal within the project site, (2) the cleaning and preparation of the logs, with and without root wads as specified, and (3) the installation of the logs and natural boulders within the stream channel and on the flood benches to create secure log habitat structures.

SS-661.2 Submittals

A. Prior to any tree removal and earthwork in the channel, the contractor shall provide submittals that include the following information:

    1. A schedule of work for the log habitat structure installation, from log salvaging to final grading over the in-place log structures. The schedule shall provide the sequencing of log structure tasks relative to relevant channel work, including but not limited to tree clearing, channel excavation, rock riffle placement, and final grading.
    2. A description of the storage location and storage conditions for the salvaged logs between the point of harvest and final placement.

B. Prior to construction of the log structures, the Contractor shall provide submittals that includes the following information:

    1. A submittal describing the boulders to be used, including the type, nominal size, source, and a photo. The photo shall clearly and accurately characterize the size, shape, and colors of the boulders. Additionally, once transported to the construction site, the boulders shall be approved for use by the Engineer.

C. Conditional Submittal: If additional logs are needed due to damage after the Notice to Proceed, resulting in a rejection of Submittal B.1, the contractor shall provide a submittal that lists the source location, tree type, diameter, length, and a photo for each replacement log. Replacement logs shall be supplied at the contractor's own expense.

SS-661.3 Materials

A. Logs

Log structures shall be constructed from onsite willow tree trunks, branches, and root wads that are targeted for removal. These trees are designated RS (remove/salvage) on the Drawings. Individual components of each RS tree correspond to each log structure and are identified with descriptions and photos in the Drawings.

If onsite wood sources are damaged due to natural occurrences prior to the Notice to Proceed, the corresponding log structure may either be eliminated from construction or constructed from an alternate onsite wood source according to the Engineer.

Responsibility for the care of the onsite wood sources rests on the contractor beginning at the date of the Notice to Proceed (NTP). Should any onsite wood sources or logs get broken, damaged, or are otherwise unavailable as designed after the NTP date, the contractor shall supply replacement logs from offsite sources, at the contractor's own expense. All imported logs shall be of equal or larger diameter and equal or longer length than that specified in the plans. Replacement logs shall be one of the following tree species: cedar, bald cypress, juniper, mesquite, catalpa, or other as approved by the Engineer. Replacement logs shall be from local sources where the tree(s) are already targeted for removal for maintenance or other reasons.

B. Boulders

Boulders shall be natural limestone boulders, such as the Superior Stone Inc. "character natural boulders" from selected riprap, or approved equal. Boulders shall be irregular in shape with a rough surface on all edges. No edges of the boulders shall be saw cut. Boulders shall be comprised of solid limestone without excessive fractures, spalls, or weak layers. The minimum specific gravity of the boulders shall be 2.4.

The boulder nominal sizes vary from 12"-24," and individual boulder sizes for specific log structures are identified in the Drawings. The nominal sizes specified in the Drawings indicate the intermediate (B) axis length, which corresponds to the boulder height (vertical dimension) when placed according to the Drawings. The nominal specified sizes are minimums, though the actual boulder heights may be up to 50% greater than the specified sizes. To maintain uniformity, the length shall be 100% to 130% of the actual boulder height, and the width shall be 70% to 130% of the actual boulder height.
An example photo of boulders of satisfactory quality and relative dimensions is shown in Figure 1 below.

Figure 1: Superior Stone Inc. "character natural boulders," selected from riprap rock.

C. The fill material, topsoil, and landscaping over the buried log keys shall match the material on the surrounding banks and comply with the landscape drawings and all relevant specifications, including but not limited to SP-601S, SP-605S, and SP-609S.

SS-661.4 Construction Methods

A. Tree Clearing, Log Salvage, and Log Storage

1. The Contractor shall notify the Engineer at least 48 hours prior to tree clearing and shall meet with the Engineer onsite to discuss salvage plans.
2. All logs targeted for salvage shall be harvested by sawcutting at the base of the trees, with the exception of tree number 126, which shall be harvested by excavating the root wad intact with the tree trunk.
3. During clearing, salvage, and storage, care shall be taken to avoid damage to any part of the salvaged logs such as extra cuts, bark stripping, breakage, or other damage. Such damage shall result in replacement of the logs, at the contractor's own expense.
4. During clearing, salvage, and storage, no trunk, branch, or other log structure component shall be cut, unless cut at the point where it tapers to less than 2" in diameter; the root wad identified in the Drawings shall not be cut or trimmed at all. Branches not called out in the Drawings may be trimmed at a distance of not less than one foot from the main trunk or parent branch. Final log cutting, trimming, and cleaning shall occur after the storage period, as detailed in Section SS-661.4.B.
5. Logs shall be stored in a clean, dry location approved by the Engineer. Logs shall be stored on or above the ground surface and shall not be exposed to alternating wet/dry conditions, which can accelerate decomposition.

B. Log Preparation Prior to Installation

1. Log preparation shall occur after the storage period and no more than two weeks before installation. Prior to log preparation, the Contractor shall arrange a meeting with the Engineer to review the expectations for each individual log that is to be altered.
2. Logs that are longer than specified on the Drawings may be cut, but the minimum dimensions shown on the Drawings, such as key burial length, shall meet the specified dimensions shown in the Drawings.
3. For the root wad, roots shall be trimmed such that the roots extend three feet in diameter horizontally from the base of the trunk, and two feet vertically from the base of the trunk. Refer to the dimensions shown in the Drawings for further clarification. Rocks and dirt clods greater than three inches in diameter shall be removed by hand or hydraulically in order to preserve all individual roots.
4. Branches not called out in the Drawings shall be trimmed to between six and 18 inches in length, and shall have leaves stripped unless otherwise directed by the Engineer.

C. Log and Boulder Installation

1. All logs to be installed shall be intact, sound, and free of excessive decay and shall not be damaged per description in Section SS-661-4.A.2.
2. Prior to installation, salvaged and prepared logs shall be approved onsite by the Engineer.
3. Logs shall be keyed into the banks to the lines, grades, height, depth and other details as shown in the Drawings. Key lengths given are minimum burial lengths.
4. When logs are placed during installation, logs shall be oriented such that the wider, lower part of the trunk is buried in the key, while the narrower, upper part of the trunk is exposed. This applies to all logs except Log Structure 2, which exposes the root wad in the channel.
5. Log keys shall be installed according to the following steps: Dig a narrow trench to the specified lines and grades shown in the Drawings, place the log in the trench to the specified lines and grades shown in the Drawings, and backfill and compact material in the trench to the specified lines and grades shown the Drawings. After key placement, trench shall be backfilled, graded and landscaped as shown in the specified lines and grades shown in the Drawings to seamlessly match the surrounding slopes.
6. Where logs lay over riffles at the channel bottom (Structures 2 and 4), logs shall rest in full contact with the riffle rock, nested 1” under the surface of the rock. Where logs lay over the natural channel bottom (Structure 4), logs shall be nested 3” under the surface of the bed material. Where floodplain logs are drawn to rest on the ground (Structures 1 and 3), logs shall rest in contact with the ground surface, even if there is a slight deviation from the specified elevation in the Drawings. No log shall be suspended in the air or water, with the exception of the log comprising the root wad in Log Structure 2, as shown in the Drawings.
7. For buried keys, maintain minimum depth below proposed grade as shown in Drawings.
8. All boulders shall be buried at least 9” below the proposed grade and the top of the boulders shall be equal to or greater than the elevation specified in the Drawings.

9. Where boulders are specified in the Drawings, place boulders immediately downstream of logs such that boulders and logs maintain physical contact. With the exception of Log Structure 2, logs shall rest beside, not atop, boulders.
10. Contractor shall consider steps required to construct log structures and adjacent work items such as rock riffle structures and adjacent channel grading when developing the most appropriate construction sequence for the project. Construction sequence shall consider placing the soil retention blanket after log structure is installed and proposed channel grading is achieved. Construction sequence shall also minimize the handlings of logs in order to avoid damage to logs.

SS-661.5 Measurement

This item will be measured on a per-log-structure basis. Each log structure is shown on the Drawings and varies in complexity.

SS-661.6 Payment

Payment will include the following work, as well as any labor, tools, and equipment necessary to complete the work: Intact salvaging of the log from the tree, log storage, log and root wad preparation, boulder purchase and installation, and log structure installation, including channel embankment work necessary to achieve proposed grading over buried log key.

Payment will be made under the following:

Pay Item No. SS-661-1:	Log Structure 1: Salvage, Storage, and Installation	Each
Pay Item No. SS-661-2:	Log Structure 2: Salvage, Storage, and Installation	Each
Pay Item No. SS-661-3:	Log Structure 3: Salvage, Storage, and Installation	Each
Pay Item No. SS-661-4:	Log Structure 4: Salvage, Storage, and Installation	Each

END

SPECIAL SPECIFICATION SS-696
Temporary Access Routes and Ramps

SS-696.1 Description

This work shall consist of performing required excavation, furnishing all specified materials, and constructing, maintaining, repairing, and restoring the Temporary Access Routes, staging/storage areas, pathways, and ramps in accordance with these specifications and in reasonably close conformity with the lines, grades, and dimensions shown on the plans or established by the Owner or as required by the Contractor for temporary access to the work areas, which does not adversely affect other aspects of the site. The work also includes the restoration of any access pathway or area to pre-existing conditions when Contractor's temporary access ramps are no longer required.

SS-696.2 Work Included

A. Excavate the existing creek banks and project work areas as required to construct temporary access ramps. Make all efforts to minimize disturbance and only excavate as necessary to allow access. This work includes proper handling, stockpiling, hauling and disposal of excavated materials as specified in the earthwork specifications that apply to this project.

B. Install rock, mulch, and/or other surface materials as directed by Engineer to minimize loss of soil, damage to trees, and erosion into the creek channel.

C. Maintain and repair the temporary access ramps during construction and prevent sediment runoff into creek.

D. Restore the access sites/route to original condition, or depending on location, incorporate the access ramp area into the work in accordance with the final lines and grades required of the Work. Restoration includes removal of any added rock, channel fill and re-grading, placement of topsoil and revegetation of all areas disturbed by construction activities for temporary access ramps, as needed to establish original condition along access route. Channel bed shall be returned to native substrate surface. Any slope protection damaged as a result of temporary access ramp construction or use shall also be repaired or replaced (as applicable) under this item of work.

E. Restoration may include loosening of existing soil compacted by contractors equipment, placing of topsoil/amendments for appropriate seeding, and seeding/watering for providing vegetation to meet pre-existing conditions. Contractor shall refer to the landscape plans for revegetation.

The work shall comply with the following Technical Standard Specifications:

1. Item 101S Preparing Right of Way;
2. Item 102S Clearing and Grubbing;
3. Item 120S Channel Excavation;
4. Item 132S Embankment;
5. Item 609S Native Grassland Seeding and Planting for Erosion Control;
6. Item SP-610S Preservation of Trees and Other Vegetation
7. Item 641S Stabilized Construction Entrance; and
8. Other applicable specifications.

Where specifications and reference documents conflict, the Engineer shall make final determination of the applicable document

SS-696.3 Measurement and Payment

Temporary access routes and ramps, staging and storage areas, restoration, and all related work and materials described herein shall not be paid for directly, but shall be subsidiary to Item No. 700S Mobilization.

END

SHEET INDEX:

CITY OF AUSTIN

WATERSHED PROTECTION DEPARTMENT

Environmental Resource Management

CIP ID NO. 5282.055

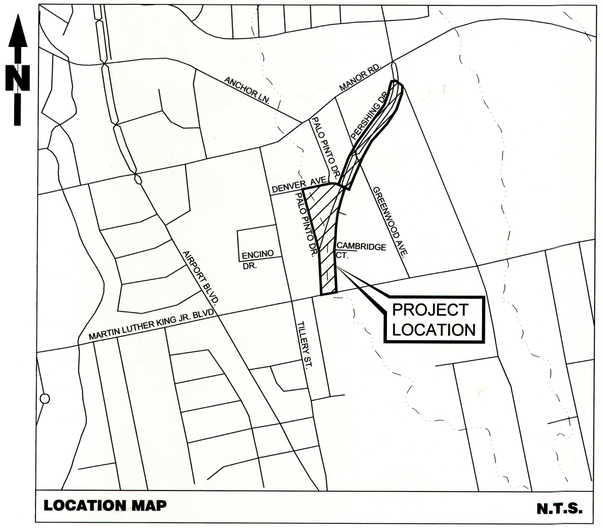
JJ SEABROOK STREAM RESTORATION, RAIN GARDEN, AND URBAN TRAIL PROJECT

NOTES:

1. CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT 24 HOURS PRIOR TO STARTING CONSTRUCTION OR CLEARING OPERATIONS.
2. CONTRACTOR SHALL CALL "ONE CALL" AT 1-800-344-8377 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO ANY WORK IN CITY EASEMENTS OR STREET RIGHT OF WAYS.
3. THIS PROJECT IS LOCATED WITHIN THE TANNEHILL BRANCH WATERSHED (CLASSIFIED AS URBAN) AND SHALL BE DEVELOPED, CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH CHAPTER 25 OF THE CODE OF THE CITY OF AUSTIN.
4. X A/NO__ PORTION OF THIS SITE IS LOCATED WITHIN PARKLAND OR LAND USED FOR PARK PURPOSES. (IF SUCH LAND IS INCLUDED, DOCUMENTATION OF PARKS AND RECREATION DEPT APPROVAL IS REQUIRED AT THE TIME OF SUBMITTAL FOR GENERAL PERMIT PROGRAM APPROVAL.)
5. X A/NO__ PORTION OF THIS SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN, PER CITY OF AUSTIN AND FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS.
6. THIS PROJECT __IS/IS NOT X WITHIN THE EDWARDS AQUIFER RECHARGE ZONE AS DEFINED BY THE CITY OF AUSTIN. THIS PROJECT __IS/IS NOT X WITHIN THE EDWRDS AQUIFER RECHARGE ZONE AS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ).
7. THERE __ARE/ARE NO X CRITICAL ENVIRONMENTAL FEATURES WITHIN 150' OF ANY PORTION OF THIS PROJECT. A FIELD INVESTIGATION X HAS BEEN PERFORMED AS A PART OF THIS PROJECT. A FIELD INVESTIGATION __HAS NOT BEEN PERFORMED AS A PART OF THIS PROJECT AND IS NOT REQUIRED.
8. THE STANDARD SHEETS INCLUDED IN THIS PLAN SET WERE PROVIDED BY THE GENERAL PERMIT PROGRAM OFFICE FOR USE ON GENERAL PERMIT PROJECTS ONLY. IF ANY MODIFICATIONS TO THE SHEETS WERE MADE, THEY ARE CLEARLY INDICATED ON THE SHEET ITSELF AND IN THE COVER SHEET INDEX.
9. ADDITIONAL TRENCH E/S CONTROL: TRIANGULAR SEDIMENT FILTER DIKE WILL BE INSTALLED ACROSS FULL WIDTH OF TRAFFIC CLOSURE AND DOWNSTREAM WILL BE INSTALLED ACROSS FULL WIDTH OF TRAFFIC CLOSURE AND DOWNSTREAM OF CONSTRUCTION AREA, PERPENDICULAR TO CURB. FILTER DIKE TO FOLLOW ACTIVE CONSTRUCTION. REMOVING AND RE-SETTING FILTER DIKE IS CONSIDERED SUBSIDIARY TO BARRICADES AND TRAFFIC HANDLING.
10. PROJECT SCHEDULE MUST BE APPROVED BY THE GENERAL PERMIT PROGRAM (GPP) COORDINATOR. INSTALLATION AND REMOVAL OF TEMPORARY AND PERMANENT EROSION/SEDIMENTATION CONTROLS MUST BE REFLECTED IN THE SCHEDULE, BY STATION NUMBER. GPP INSPECTOR MUST BE NOTIFIED A MINIMUM OF 48 HOURS IN ADVANCE OF TRANSITION BETWEEN PHASES.
11. APPROPRIATE EASEMENTS/APPROVALS MUST BE SECURED AND DOCUMENTED FOR PROJECT AREAS LOCATED OUTSIDE OF RIGHT OF WAYS. NO WORK SHALL BE PERFORMED WITHIN THESE AREAS UNTIL ASSOCIATED RIGHT OF ENTRY HAS BEEN SECURED. ADDITIONALLY, PROJECT PORTIONS IMPACTED BY LACK OF RECORDED DOCUMENT NUMBERS WILLO NOT BE CONSIDERED FOR FORMAL GPP REVIEW.
12. CONTRACTOR SHALL STAKE ALL PROPOSED SERVICE CONNECTIONS LOCATED WITHIN THE CRITICAL ROOT ZONE OF TREES 8" IN CALIPER AND LARGER AT LEAST 21 CALENDAR DAYS PRIOR TO CONSTRUCTION OF SUCH SERVICES. STAKING SHALL CONSIST OF A LATH WITH NAIL AND PAINT MARKINGS. IN CASES WHERE A STAKE CANNOT BE PLACED WITHOUT DAMAGING PROPERTY, CONTRACTOR MAY USE PAINT ONLY. ONCE STAKING IS COMPLETED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INFORM THE CITY OF AUSTIN'S CONSTRUCTION INSPECTOR WITHIN TWENTY-FOUR HOURS. THE CITY OF AUSTIN'S CONSTRUCTION INSPECTOR WILL THEN COORDINATE A FIELD REVIEW OF THE SERVICE LOCATIONS WITH THE GENERAL PERMIT PROGRAM COORDINATOR AND PROPERTY OWNERS. SERVICE LINE LOCATIONS MAY BE ADJUSTED BASED ON THE REVIEW AND WILL BE RESTAKED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL SERVICE LINE STAKING SHALL BE MAINTAINED UNTIL THE SERVICE IS INSTALLED.

GENERAL PERMIT PROGRAM CORRECTIONS RECORD

No.	DESCRIPTION	BY	CORRECT (C) ADD (A) VOID (V) SHEET Nos.	TOTAL No. SHEETS IN CORRECTION PLAN SET	CITY OF AUSTIN APPROVAL/DATE	DATE IMAGED
1	ADD. 5: REVISED SOIL, ADD DETAIL, REVISED CLEAR COVER	KS	(C)	4		
1	ADD. 5: ADDED CONCRETE FOOTER & UNIAXIAL GEOGRIDS, GEOTECHNICAL DESIGN PAREMETERS, FACTORS OF SAFETY TABLE, NOTES 12 & 13 TO SHEET 29, AND NOTES 13, 14 & 15 TO SHEET 31	KP	(C)	2		



LOCATION MAP N.T.S.

100% PLANS

STATE OF TEXAS
KRISTIN KASPER PIPKIN
99265
LICENSED
PROFESSIONAL ENGINEER
9/9/13

STATE OF TEXAS
KEVIN SWEAT
92023
LICENSED
PROFESSIONAL ENGINEER
9/5/2013

NOTES:
GENERAL PERMIT PROGRAM APPROVAL DOES NOT CONSTITUTE UTILITY ALIGNMENT/ASSIGNMENT APPROVAL.

RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.

PROJECT INFORMATION:

ADDRESS: TANNEHILL BRANCH - GIVENS PARK TRIBUTARY I
AUSTIN, TX. 78723

MANAGING DEPARTMENT: CITY OF AUSTIN PUBLIC WORKS DEPT.
CONTACT: CHRISTINA CALVERY
ONE TEXAS CENTER
505 BARTON SPRINGS ROAD, 9TH FLOOR
AUSTIN, TEXAS 78704
(512) 974 - 7094

SPONSORING DEPARTMENT: CITY OF AUSTIN WATERSHED PROTECTION DEPT.
CONTACT: KRISTIN K. PIPKIN, P.E.
ONE TEXAS CENTER
505 BARTON SPRINGS ROAD, 11TH FLOOR
AUSTIN, TEXAS 78704
(512) 974 - 3315

SUBMITTAL PREPARED BY:

CITY OF AUSTIN
WATERSHED PROTECTION DEPARTMENT
CONTACT: KRISTIN K. PIPKIN, P.E.
PHONE: (512) 974 - 3315

CITY OF AUSTIN
PUBLIC WORKS DEPARTMENT
CONTACT: KEVIN SWEAT, P.E.
PHONE: (512) 974 - 7017

SUBMITTED FOR APPROVAL BY:

Kristin K Pipkin 9/9/13
KRISTIN K. PIPKIN, PE DATE

KS 9/5/2013
KEVIN SWEAT, PE DATE

APPROVED BY GENERAL PERMIT HOLDER:

WATERSHED PROTECTION DEPARTMENT
FOR GENERAL PERMIT HOLDER

GP-12-0000-WPD **03/16/2014**
ANNUAL GENERAL PERMIT NUMBER

REVIEWED BY:

9-5-13
CITY OF AUSTIN PARKS AND RECREATION DEPT. DATE

9/5/13
CITY OF AUSTIN PUBLIC WORKS DEPT. DATE

Dept. D. Barlow 9-5-13
AUSTIN TRANSPORTATION DEPT. DATE

APPROVAL FOR SITE DEVELOPMENT PERMIT:

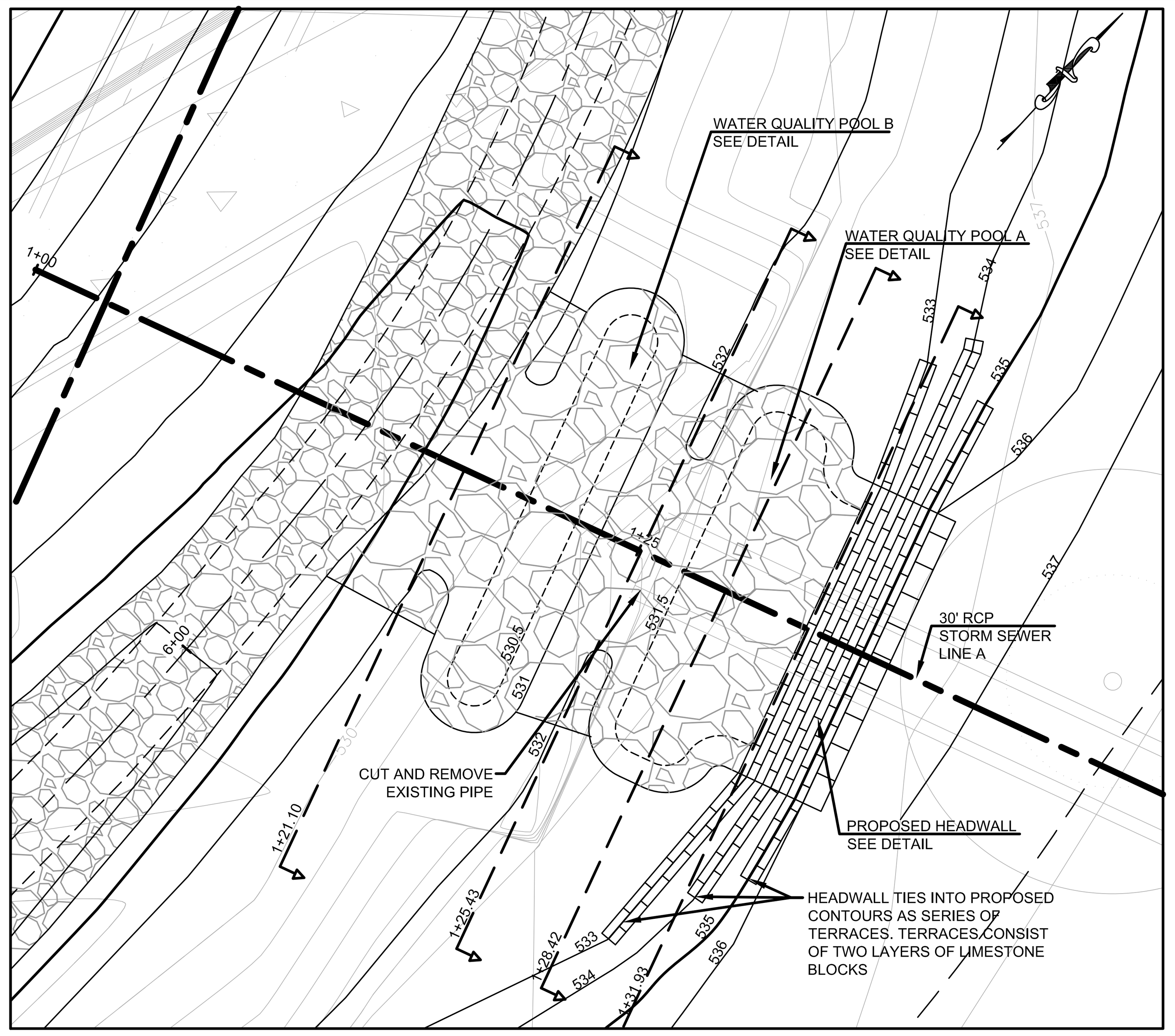
12/6/13
GENERAL PERMIT PROGRAM COORDINATOR DATE
PLANNING AND DEVELOPMENT REVIEW DEPARTMENT

GP-2013-0093.WPD
DEVELOPMENT PERMIT NUMBER

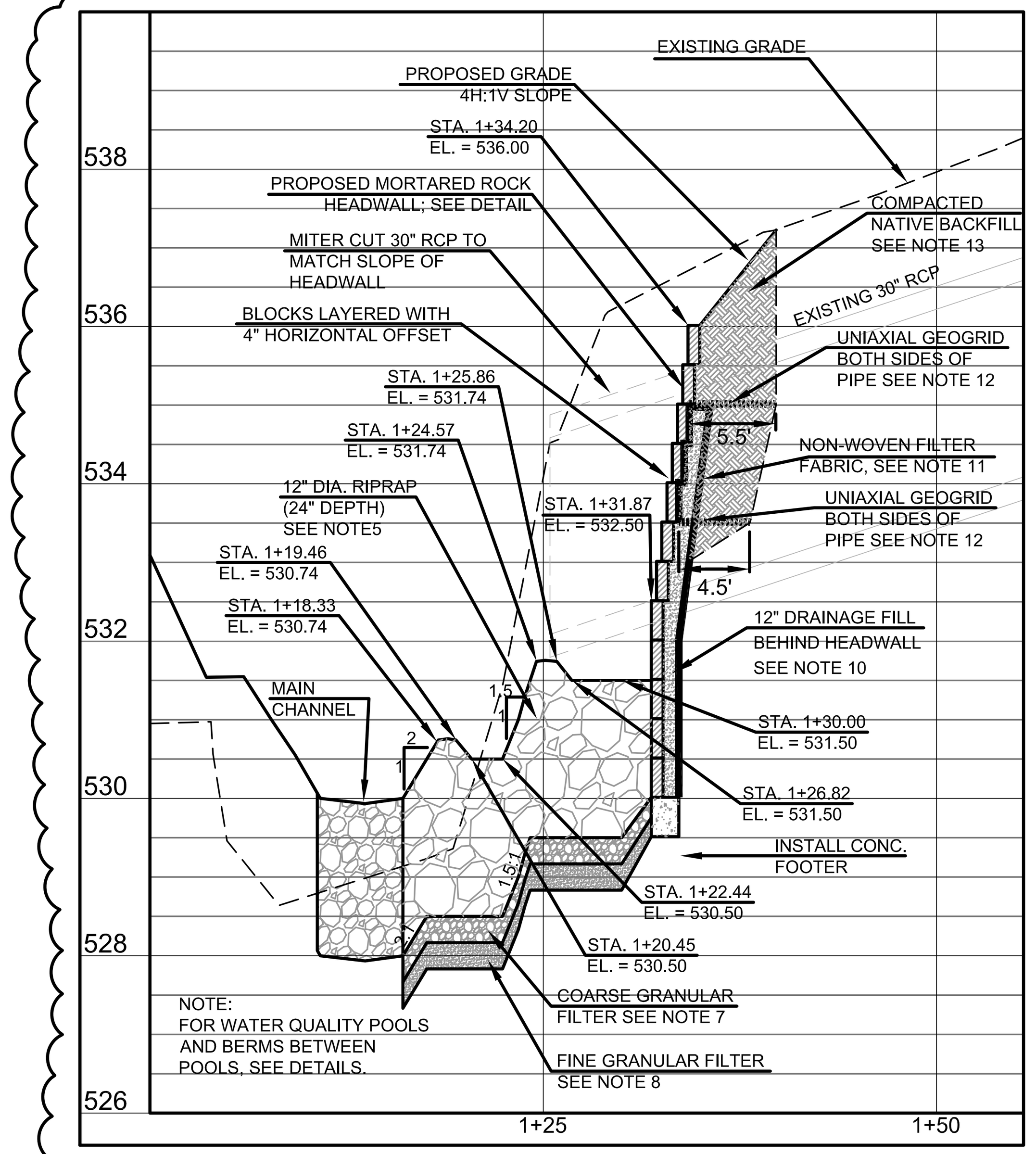
10/2/13
SUBMITTAL DATE:

GENERAL PERMIT PROGRAM

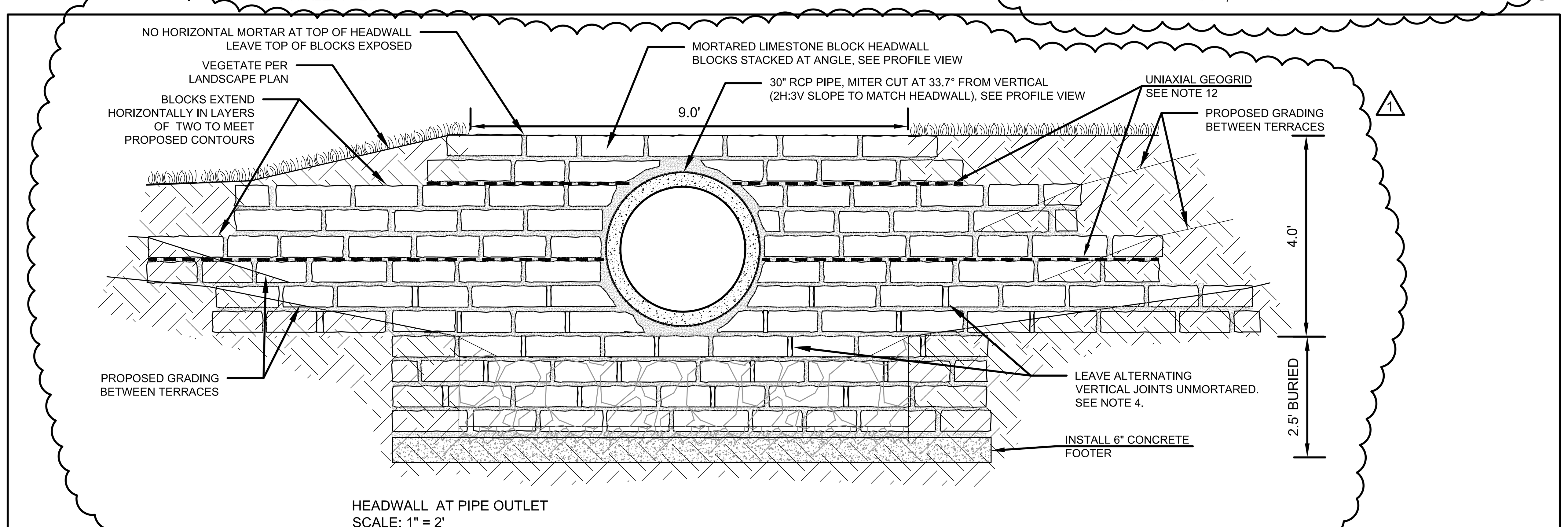
ADDENDUM 5



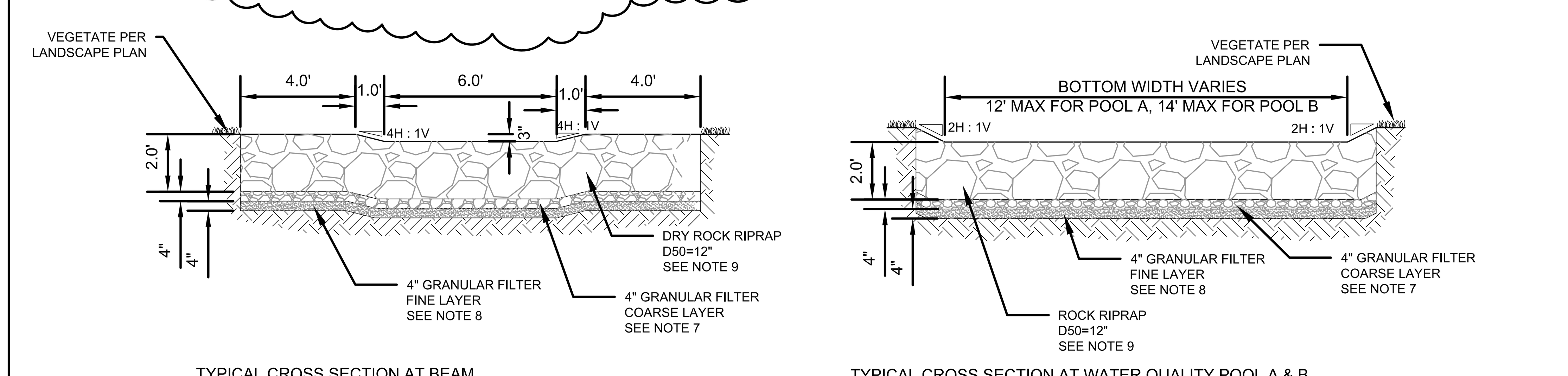
1 STORM SEWER LINE "A"
PLAN VIEW
SCALE: 1"=20'



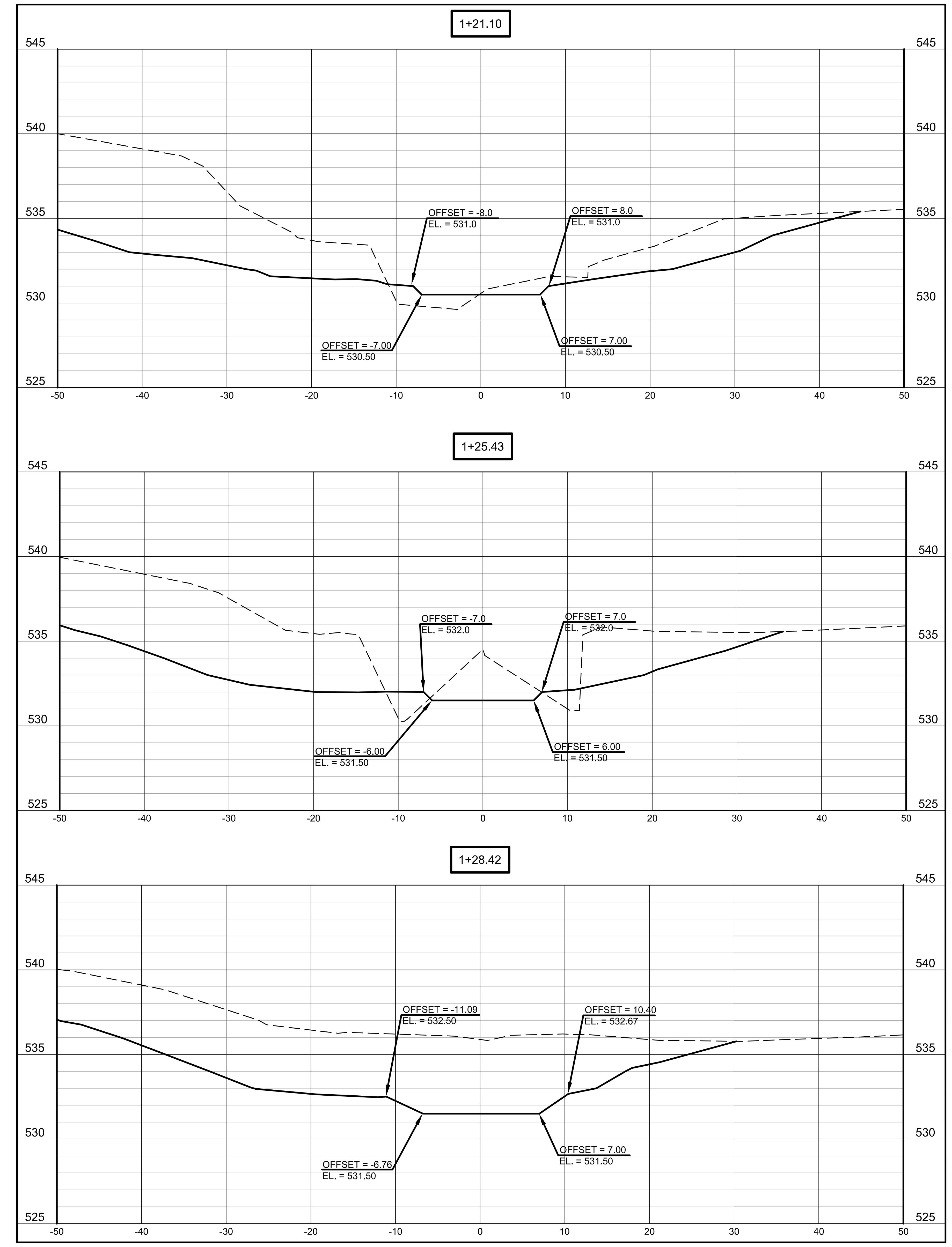
2 STORM SEWER LINE "A"
PROFILE VIEW
SCALE: 1"=20' H., 1"=4' V.



HEADWALL AT PIPE OUTLET
SCALE: 1" = 2'



3 STORM SEWER LINE "A"
DETAILS
SCALE: 1"=2' , 1"=4'



4 STORM SEWER LINE "A"
CROSS SECTIONS AT STA 1+21.1, 1+25.43, AND 1+28.42
SCALE: 1"=10' H., 1"=5' V.

NOTES:

1. LIMESTONE BLOCKS FOR HEADWALL SHALL BE CUSTOM STONE CHOPPED "GRANBURY" OR APPROVED EQUAL PER SPECIAL PROVISION 640S.
2. ALL SOIL FROM POOLS TO EXISTING GRADE SHALL BE COVERED ACCORDING TO LANDSCAPE PLANS.
3. SIDE SLOPES OF POOLS SHALL BE 2:1
4. BOTTOM TWO EXPOSED COURSES OF HEADWALL AS WELL AS BURIED COURSES SHALL LEAVE ALTERNATING VERTICAL GAPS UNMORTARED IN ORDER TO ALLOW SEEPAGE.
5. 12" ROCK RIPRAP SHALL BE WELL GRADED, AVOID LARGE VOIDS BETWEEN THE ROCKS, AND HAVE A SMOOTH, LEVEL TRANSITION TO THE SURROUNDING GRADE.
6. EXISTING UTILITIES ARE SHOWN AT APPROXIMATE LOCATION AND THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATION AND OR DEPTH.
7. 4" GRANULAR FILTER SHALL BE CONSTRUCTED WITH A LAYER OF GRADE 9 COARSE AGGREGATE (TEXAS CRUSHED STONE #003 OR APPROVED EQUAL) PER SPECIAL PROVISION 403S.
8. 4" GRANULAR FILTER SHALL BE CONSTRUCTED WITH A FINE LAYER OF GRADE 11 FINE AGGREGATE (TEXAS CRUSHED STONE #564 OR APPROVED EQUAL) PER SPECIAL PROVISION 403S.
9. ROCK RIPRAP (D50=12") SHALL BE IN ACCORDANCE TO CLASS 3 ROCK RIPRAP PER SPECIAL PROVISION 591S.
10. 12" THICK DRAINAGE FILL SHALL BE CONSTRUCTED WITH A LAYER OF GRADE 10 COARSE AGGREGATE (TEXAS CRUSHED STONE #066 OR APPROVED EQUAL) PER SPECIAL PROVISION 403S.
11. NON-WOVEN FILTER FABRIC SHALL BE TXDOT TYPE 1, MIRAFI 140N OR APPROVED EQUAL, PER SPECIAL PROVISION 640S.
12. GEOGRID SHALL BE TENSAR UX1400HS OR APPROVED EQUAL PER SP-640S.
13. BACKFILL SHALL BE COMPACTED NATIVE BANK MATERIAL PER SP-640S.

GEOTECHNICAL DESIGN PARAMETERS

MATERIAL	FRICTION ANGLE (DEG.)	COHESION (PSF)	MOIST UNIT WEIGHT (PCF)
Foundation Soil	26	200	125
Retained Soil	26	0	125
Reinforced Soil	26	0	125
Limestone Blocks	N/A	N/A	150
Block/Block Interface	39	N/A	N/A
Block/Geogrid Interface	32	N/A	N/A

FACTORS OF SAFETY SUMMARY

STRUCTURE	FS - SLIDING		FS - OVERTURNING		FS - BEARING CAPACITY	
	COMPUTED	CRITERIA	COMPUTED	CRITERIA	COMPUTED	CRITERIA
STORM PIPE HEADWALL A	2.24	1.5	6.9	2	15.24	3
SPRING HEADWALL B	1.85	1.5	7.05	2	22.12	3
STORM PIPE HEADWALL C	1.91	1.5	5.05	2	13.64	3

JJ SEABROOK STREAM RESTORATION, RAIN GARDEN & URBAN TRAIL PROJECT

STORM DRAIN RETROFITS

ENVIRONMENTAL RESOURCE MANAGEMENT
505 BARTON SPRINGS RD.
AUSTIN, TEXAS 78704
PHONE: (512) 974-2000

REVISIONS

City of Austin WATERSHED PROTECTION

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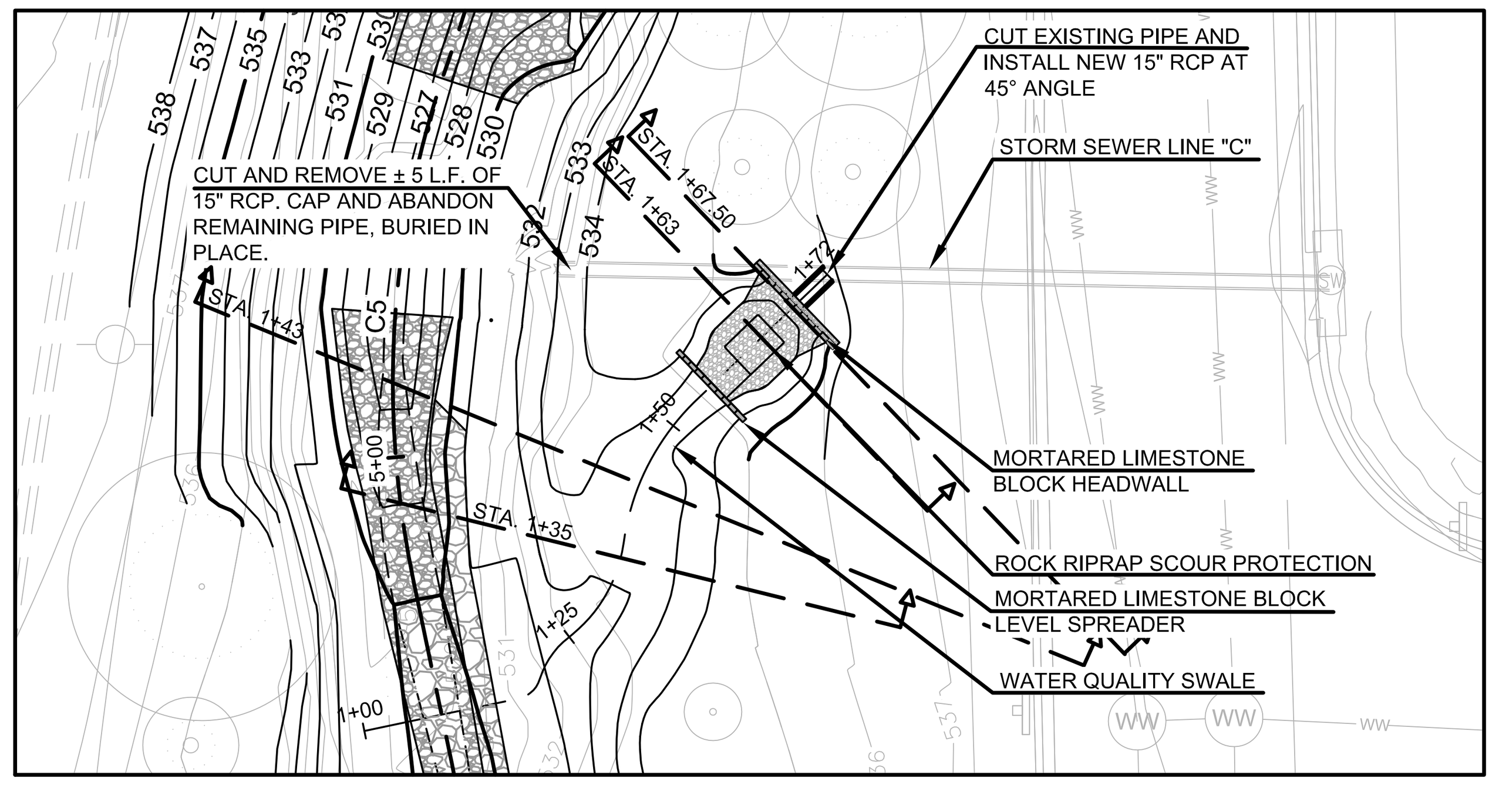
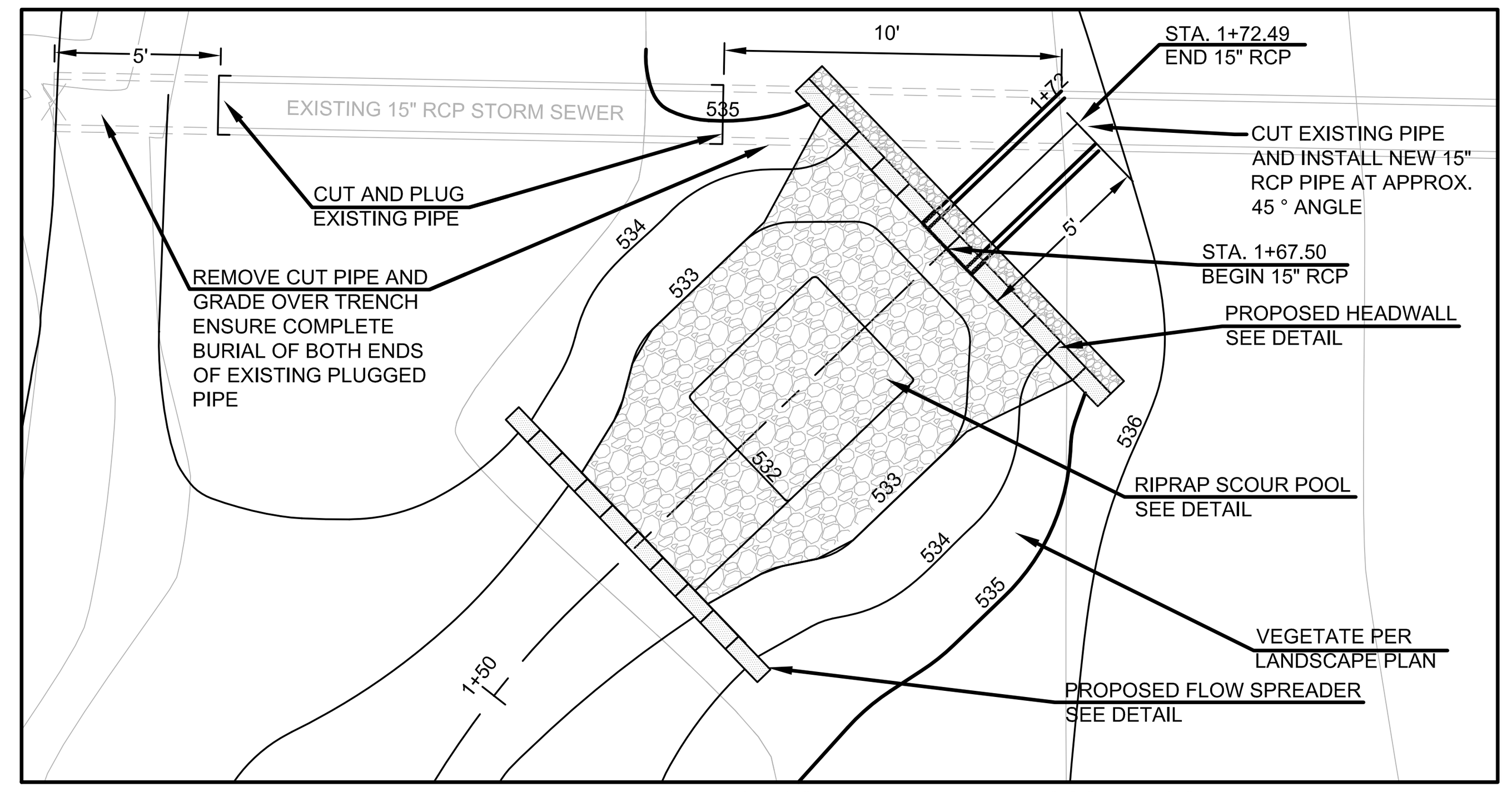
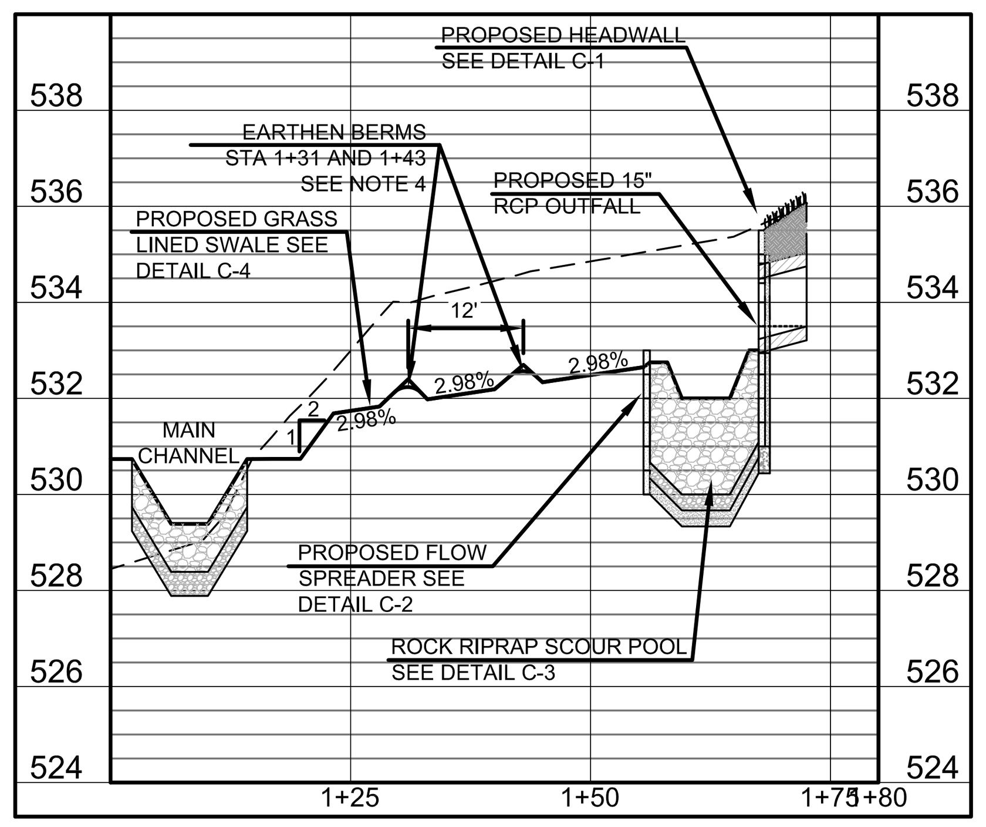


1 STORM SEWER LINE "C"
PLAN VIEW
SCALE: 1" = 20'

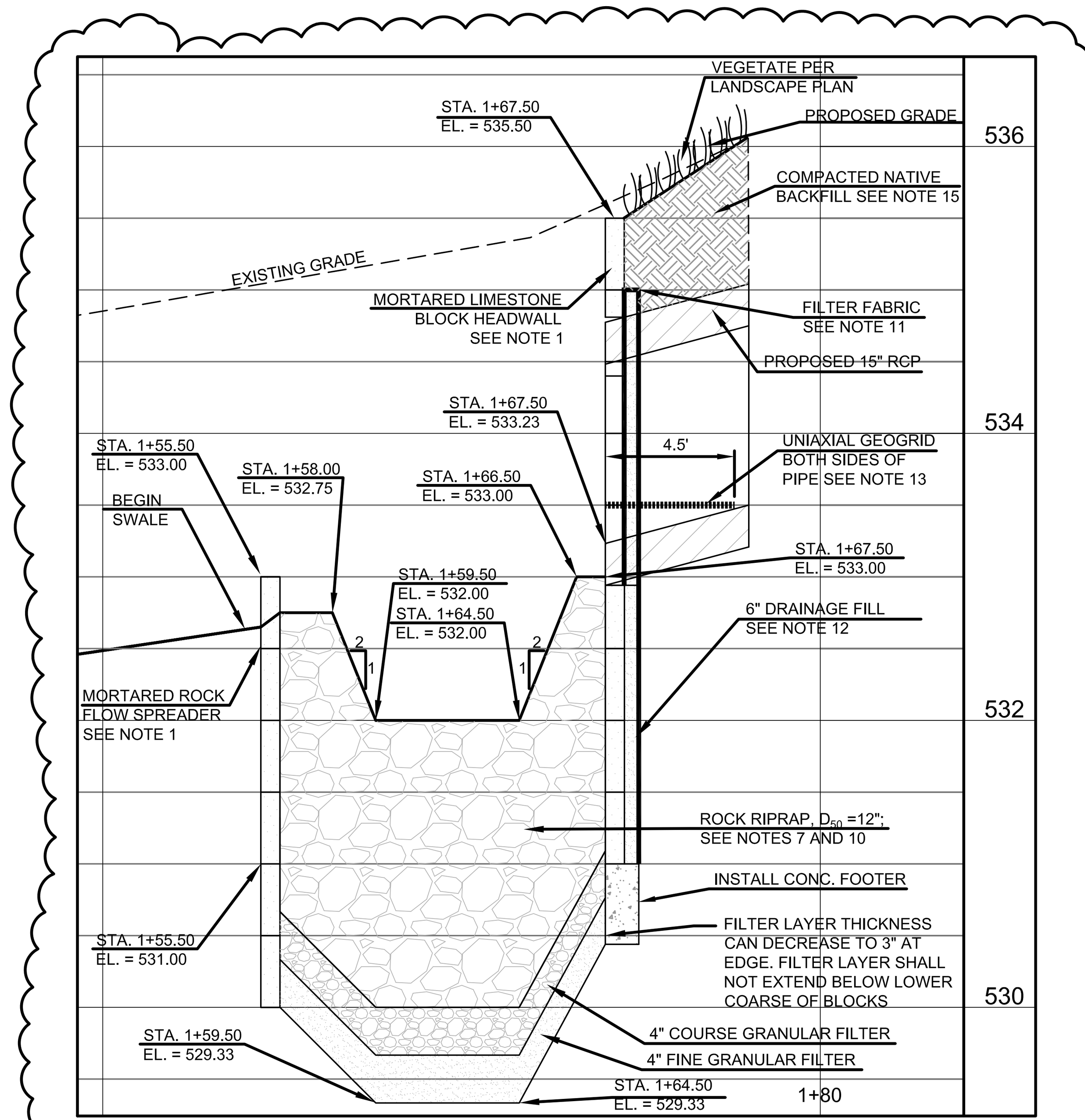


SCALE: 1" = 5' H.
1" - 1' V.

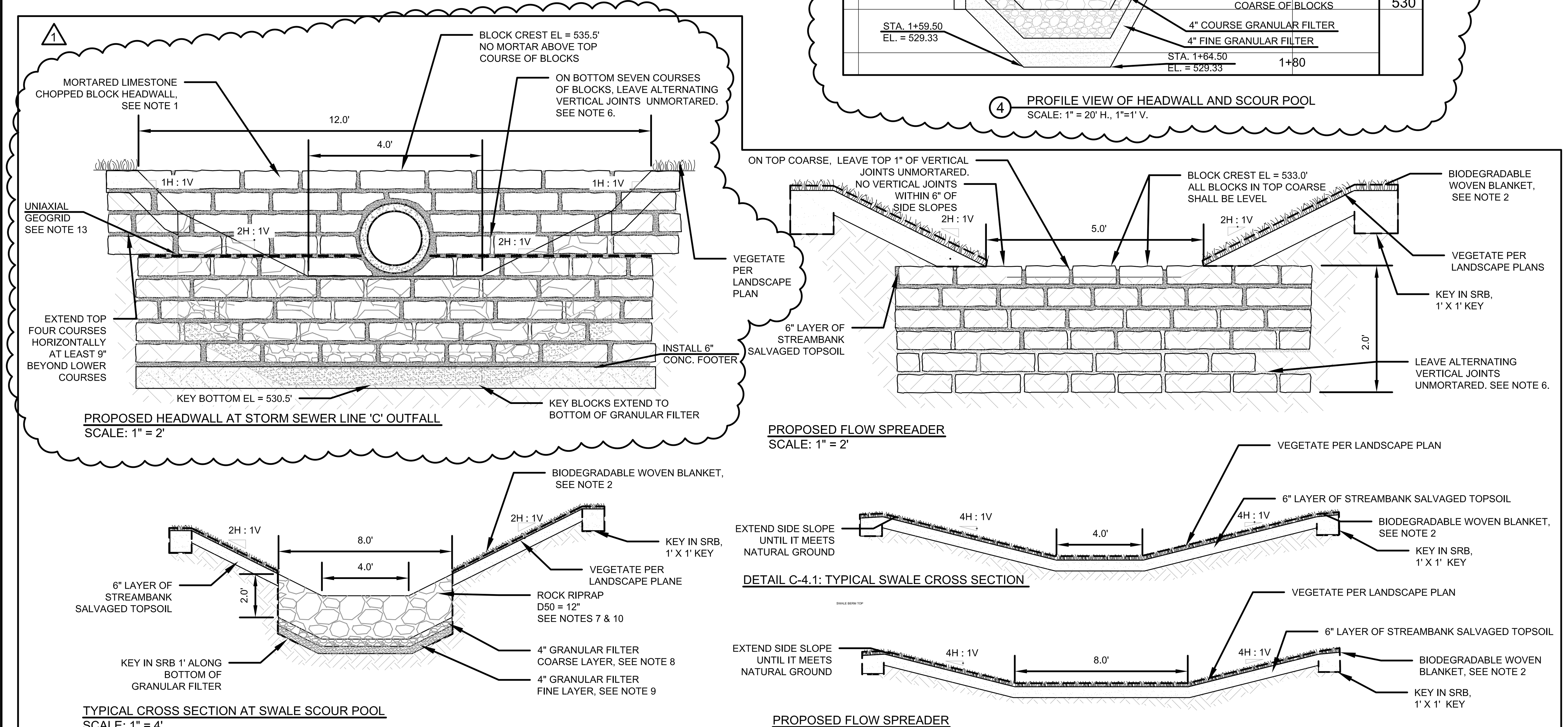
3 PLAN VIEW OF HEADWALL AND SCOUR POOL
SCALE: 1" = 20' HORIZONTAL



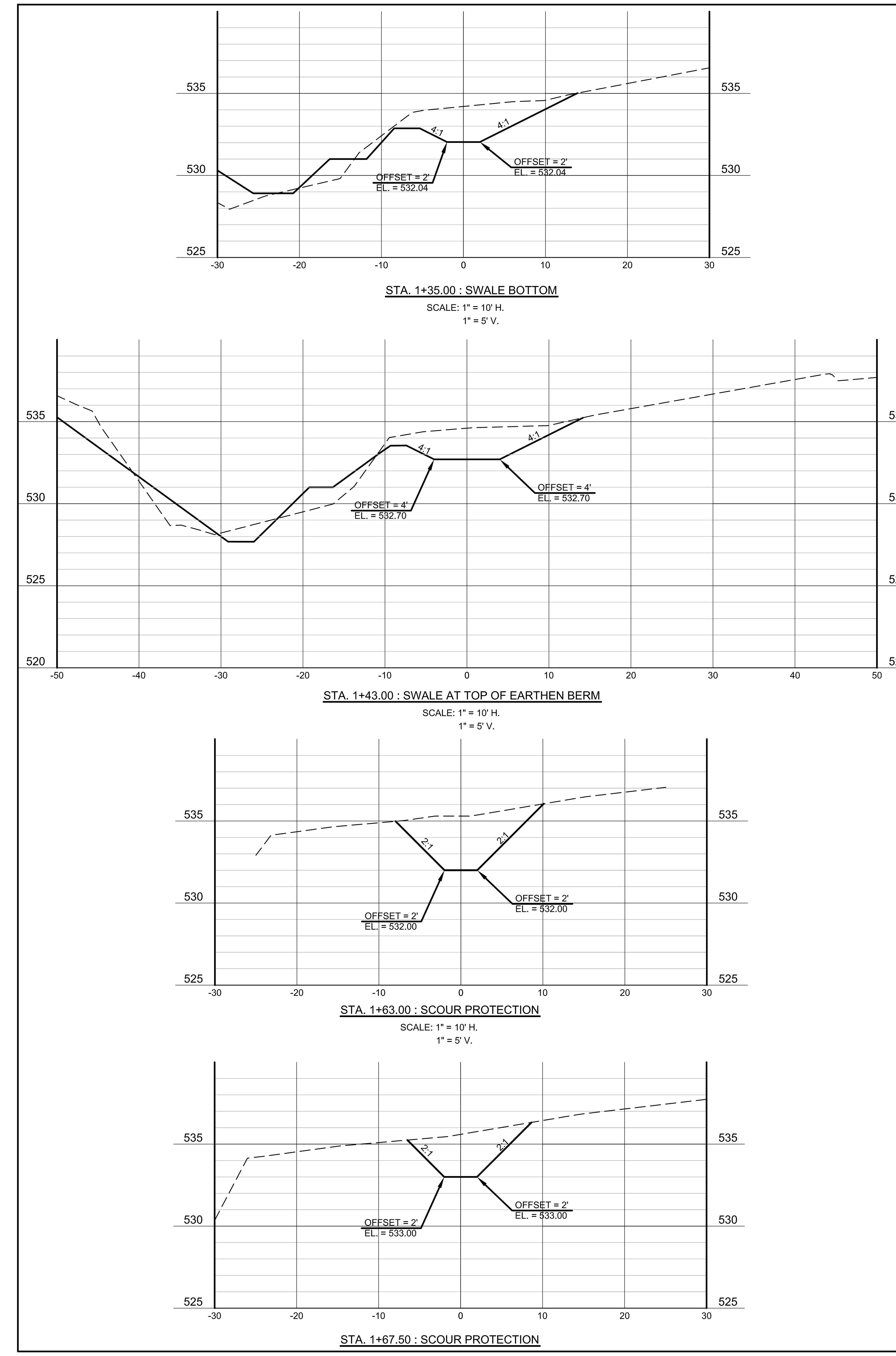
2 STORM SEWER LINE "C"
PROFILE VIEW
SCALE: 1" = 20' H., 1" = 4' V.



4 PROFILE VIEW OF HEADWALL AND SCOUR POOL
SCALE: 1" = 20' H., 1"=1' V.



5 STORM SEWER LINE "C"
DETAILS
SCALE: 1"=2' AND 1" = 4'



6 STORM SEWER LINE "C"
CROSS SECTIONS AT STA 1+35.0, 1+43.0, 1+63.0, AND 1+67.5
SCALE: 1" = 10' H., 1"=5' V.

NOTES:

1. LIMESTONE BLOCKS FOR HEADWALL AND FLOW SPREADER SHALL BE CUSTOM STONE CHOPPED "GRANBURY" OR APPROVED EQUAL PER SPECIAL PROVISION 640S.
2. LINE SWALE WITH SOD FROM LEVEL SPREADER TO ROCK AT CONFLUENCE WITH CREEK. SEE LANDSCAPE PLAN. COVER SOD WITH BIODEGRADABLE WOVEN SOIL RETENTION BLANKET, TXDOT CLASS 1 TYPE A, ROLANKA BIO-D MESH 60 OR APPROVED EQUAL PER SPECIAL PROVISION 605S. KEY BLANKET AT TRANSITION TO EXISTING GRADE, 2' FROM TOP OF SWALE. ADDITIONALLY, STAPLE BLANKET AT BOTTOM OF SLOPES.
3. SIDE SLOPES SHALL BE 2:1 AT OUTFALL, TRANSITIONING TO 4:1 ALONG SWALE.
4. WITHIN SWALE, CONSTRUCT TWO 6" TALL EARTHEN BERMS, 12 FEET APART FROM CREST TO CREST. BERMS SHALL HAVE AN UPSTREAM SLOPE OF 3H:1V AND A DOWNSTREAM SLOPE OF 2H:1V.
5. EXISTING UTILITIES ARE SHOWN AT APPROXIMATE LOCATION AND THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATION AND OR DEPTH.
6. BOTTOM TWO EXPOSED COURSES OF HEADWALL AS WELL AS BURIED COURSES SHALL LEAVE ALTERNATIVNG VERTICAL GAPS UNMORTARED IN ORDER TO ALLOW SEEPAGE.
7. 12" ROCK RIPRAP SHALL BE WELL GRADED, AVOID LARGE VOIDS BETWEEN THE ROCKS, AND HAVE A SMOOTH, LEVEL TRANSITION TO THE SURROUNDING GRADE.
8. 4" COARSE GRANULAR FILTER SHALL BE CONSTRUCTED WITH A LAYER OF GRADE 9 AGGREGATE (TEXAS CRUSHED STONE #003 OR APPROVED EQUAL) PER SPECIAL PROVISION 403S.
9. 4" FINE GRANULAR FILTER SHALL BE CONSTRUCTED WITH A LAYER OF GRADE 11 AGGREGATE (TEXAS CRUSHED STONE $564 OR APPROVED EQUAL) PER SPECIAL PROVISION 403S.
10. ROCK RIPRAP (D50=12") SHALL BE IN ACCORDANCE TO CLASS 3 ROCK RIPRAP PER SPECIAL PROVISION 591S.
11. FILTER FABRIC SHALL BE A TXDOT TYPE 1 NONWOVEN FILTER FABRIC, TENCATE MIRAFI 140NC OR APPROVED EQUAL PER SPECIAL PROVISION 640S. FILTER FABRIC SHALL EXTEND 2' BELOW INTERFACE OF SOIL AND DRAINAGE FILL.
12. DRAINAGE FILL SHALL CONSIST OF GRADE 10 AGGREGATE (TCS #066 OR APPROVED EQUAL) PER SPECIAL PROVISION 403S.
13. GEOGRID SHALL BE TENSAR UX1400HS OR APPROVED EQUAL PER SP-640S. (1)
14. FOR HEADWALL CALCULATIONS SUMMARY SEE SHEET 29.
15. BACKFILL SHALL BE COMPACTED NATIVE BANK MATERIAL PER SP-640S.

JJ SEABROOK STREAM RESTORATION, RAIN GARDEN & URBAN TRAIL PROJECT

STORM DRAIN RETROFITS

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NO.	BY	DATE	REMARKS

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WATERSHED PROTECTION

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