**CITY OF BRANSON, MISSOURI**
**PURCHASING DEPARTMENT**

**REQUEST FOR BID 2860-05A, 2860-05B, 2860-05C, 2860-05D**
**W 76 Country Blvd Streetscape – Segments 1 and 2**

**James Morris, Bid Coordinator**
**City of Branson, Purchasing Office**
**110 W. Maddux St., Suite 200**
**Branson, MO 65616**

**Date Issued: 7/10/2026**
**Buyer's Email: jmorris@bransonmo.gov**
**Telephone: (417) 337-8553 Ext. 1407**
**DUE DATE: 7/31/2026 at 9:00 AM**

# Addendum No. 2

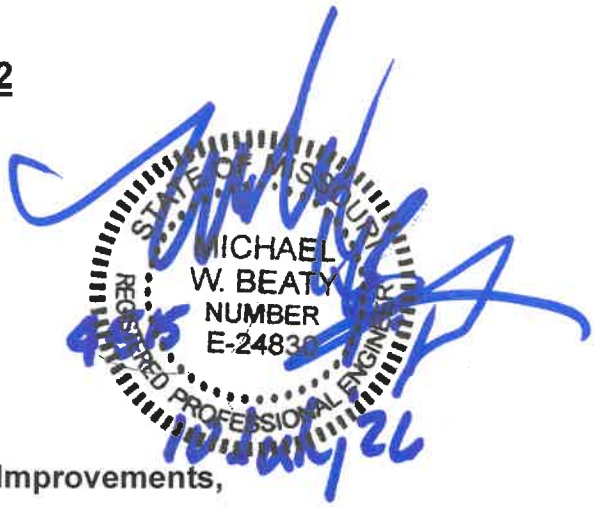
Vendors are directed to the documents attached following this Addendum Acknowledgement. Vendors are solely responsible for reviewing all attached materials in their entirety and ensuring their bid submission reflects any applicable changes contained therein.

**ALL BIDDERS ARE REQUESTED TO SIGN THE ACKNOWLEDGMENT BELOW AND INCLUDE WITH BIDS TO CONFIRM RECEIPT OF ADDENDUM #2**

_____
**Signature**
**Acknowledged by Bidder**

**End of Addendum No.** 2

# Addendum NO _2_




**ISSUED BY:** *Great River Engineering*
*2826 S. Ingram Mill Rd.*
*Springfield, Missouri 65804*
*(417) 886-7171*
*(417) 886-7591 --- FAX*

**DATE:** **July 10, 2026**

**FOR:** **W 76 Country Boulevard Streetscape Improvements,**
**Contracts EN7622, SNS0032 &**
**W 76 Country Blvd Median Improvements**
**Contracts TAP-9901(886) and STP-0761(023)**
**GRE Project 4515**

The attached revisions hereby supersede any and all data with which they may conflict as indicated on the Drawings, Specifications and related documents issued in the original set. Each trade is responsible for changes in its work caused by changes in the work of other trades. This addendum is a part of and shall be attached to the original sets of plans and specifications for the work.

**Notification:** There has been 1 addendum issued prior to this addendum. See Addendum 1.

**CHANGES: To Contracts EN7622, SNS0032, TAP-9901 (886) , STP-0761 (023)**

1. **Bid Date Extension – Change first paragraph of advertisement for bids advertisement to read as follows**

   RFB 2860-05 Sealed electronic bids for W. 76 Country Blvd. Segment 1 & 2 will be received by the City of Branson using the City's designated electronic bidding platform, DemandStar until **3:00 p.m., local time July 31, 2026** and then publicly opened and read aloud via teleconference.

2. **Change Cover Sheets CV-01, W-01, and U-01 and West 76 Country BLVD Median Improvements Cover Sheet – Add Contact Information for Optimum to Utility Contacts Table**

   Alex Gomez - alexander.gomez@optimum.com – (316) 644-2823

**CHANGES: To Contract EN7622**

3. **Change to Sheet GN-01 of 03 - Add the Following Sculpture Artists to Note 3**

   **3d. Cost of Wisconsin**
   Specialty, Theming, and Theme Park Construction Services | COST of Wisconsin
   cflores@cost-inc.com
   1326 W. Trimble Ave, Berryville, AR 72616
   (870) 568-2461

**3e. Little Spider Creations**

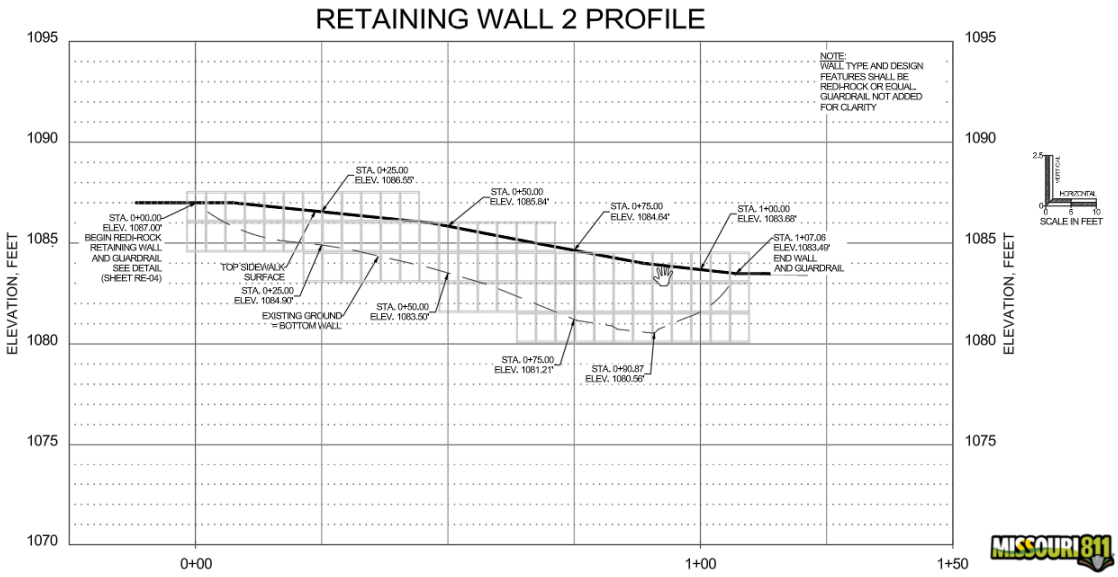
Little Spider Creations | Little Spider Creations Projects
info@LittleSpiderCreations.com
4613 Broad Street, Loris, SC 29569
(843) 273 - 0996

**3f. Weber Group**

Weber Creative | Theming Contractor
joshhuff@webergroupinc.com
5233 Progress Way, Sellersburg, IN 47172
(812) 246-2100

4. **Change to 76 Country Blvd Streetscape– Sheet RW-05 of 06 –** See snippets below

   a. Revised retaining wall 2 profile

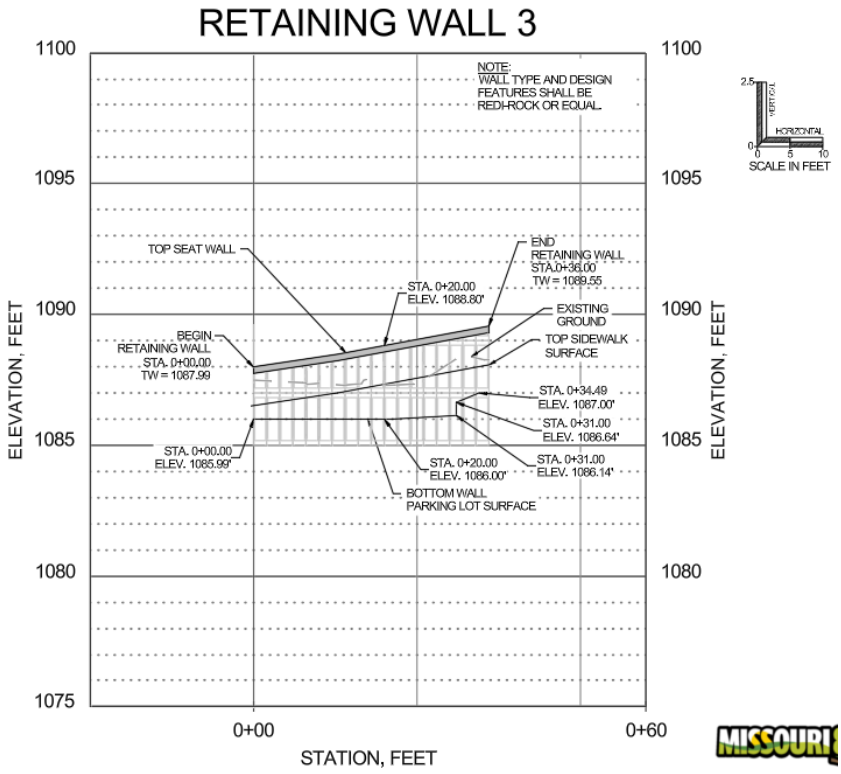



   b. Revised Title block

| | | | |
|---|---|---|---|
| SHEET RW-05 OF 06 | JOB NUMBER: 4515 | DATE: 06/16/2026 | W. 76 COUNTRY BLVD STREETSCAPE<br>SEG. 1 & 2 and MODOT SNS0032 & EN7622<br>CITY OF BRANSON, MISSOURI<br>RETAIN. WALL 2 P&P |

5. **Change to 76 Country Blvd Streetscape– Sheet RW-06 of 06–** See snippets below

   a. Revised retaining wall 3 profile




b. Revised Title block

| | | | |
|---|---|---|---|
| SHEET RW-06 OF 06 | JOB NUMBER: 4515 | DATE: 06/16/2026 | W. 76 COUNTRY BLVD STREETSCAPE<br>SEG. 1 & 2 and MODOT SNS0032 & EN7622<br>CITY OF BRANSON, MISSOURI<br>RETAIN. WALL 3 P&P |

6. **Landscape Plan Revisions – See Attached Landscape Plan Sheets LP-00, LP-01, and LP-34 through LP-38**

7. **JSP 64 - Lanscape Technical Specifications:** Replace the landscape technical specifications with the following technical specification sections attached.

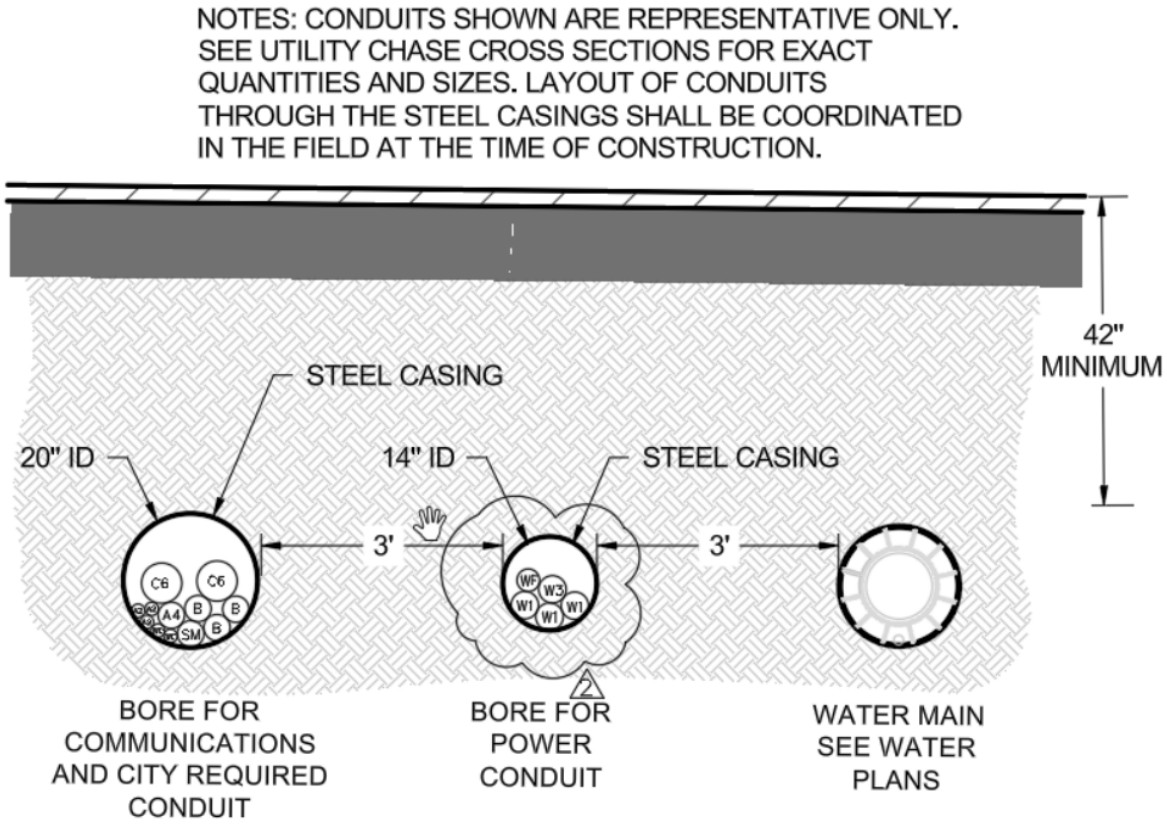
a. **Division 3**

| | |
|---|---|
| 033715 | Artificial Rockwork |

b. **Division 32**

| | |
|---|---|
| 321316 | Decorative Concrete Paving – Piano Walk |
| 321401 | Flagstone Paving |
| 321813 | Synthetic Turf Protective Surfacing |
| 323300 | Site Furnishings |
| 328400 | Landscape Irrigation |
| 329113 | Soil Preparation |
| 329300 | Plants |

8. **Change to 76 Country Blvd Streetscape Improvements– Sheet U-34 of 34–** See snippet below




SHEPHERD OF THE HILLS EXPY
UTILITY CORRIDOR CROSSING

**CLARIFICATONS:** The following clarifications do not change the plans, specifications or conditions of the project, but are provided based on inquiries regarding the plans and/or a result of the prebid meeting held June 30, 2026.

1. **Lumen National Contact Number**

   The new contact is Tim Dubois (636) 463-4093.

2. **Materials for Utility Conduits, Vaults and Pedestals General**

   Contractor will provide and install all conduits, vaults, bases, or other elements in which a conduit terminates or commences for each utility **except** for White River Electric Fiber conduit (3") and all White River Electric Vaults in the common trenches. Contractor will provide and install all conduit wiring pull boxes for the lighting. Utilities will provide and install their own wire, switches, panels, controllers, transformers, cabinets, etc.

3. **Materials for Vaults and Conduits – White River Electric Elements**

   Contractor will provide and install the conduit and steel fittings/sweeps for all 4" diameter White River Electric and White River Connect conduits. (WRE and WC)

   White River Electric will provide all the vaults for all White River Elements including: 40 x 96 vaults, 40 x 40 vaults, 60 x 60 vaults, 30 x 30 Fiber vaults, and 84 x 108 Switch Gear Vaults. White River Electric will also provide all 3" diameter conduit and fittings for White River Fiber Elements (WF). Contractor will install all elements in the utility trench as indicated.

4. **Sweep Requirement Details for WRE Vaults**

   For conduits less than 3" use a 24-inch bending radius. For 3", 3.5", and 4" conduits, the baseline industry standard is a 36-inch bending radius. For 5" and 6" conduits, a 48-inch bending radius is standard.

5. **Power Supply Type**

   All power supplies will be type 2 underground type. A revised bid form will be issued.

6. **Pull Box Sizes**

   Plans indicate class 1 pull boxes with entering wire conductor counts less than 23. All lighting pull boxes and irrigation pull boxes will be limited to less than 10 conductors. See detail sheet L- 4 of 16. Use class 1 pull boxes.

7. **Rigid Conduit Type**

   In accordance with MODOT standards, rigid steel conduit is only required for the connection between the power supply and the lighting controller and when the new conduit is being pushed under existing pavement. All lighting conduit for this project is being trenched in and PVC for everything other than the power supply connection is acceptable. Contractor may elect to use steel conduit for other applications at his/her own option, but no additional costs will be paid.

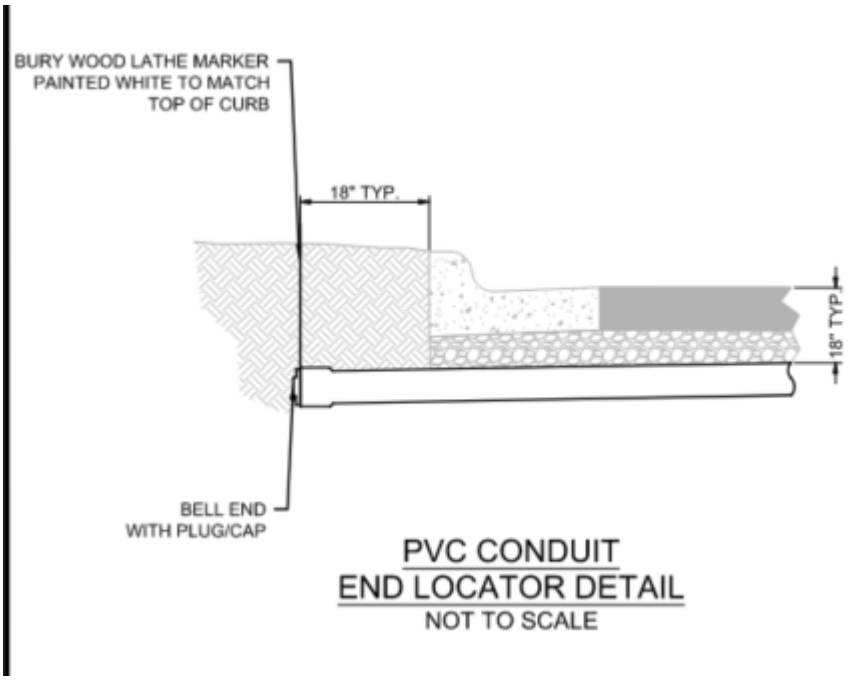
8. **Hawk System Traffic Signal Breakaway Poles**

   Pole base detail for mast arms is shown on Sheet 29 of 34 and conforms with MODOT standard Type A base. The top of the base is 2' above finish grade. Breakaway bolts and pole anchors will not be required for the mast arm bases.

**9. Restraint Pipe for Water Lines**

The City of Branson's Standard Specifications specifically name Certa Lok restrained joint integral pipe systems as an acceptable restraint joint system, so the Certa Lok system is acceptable. However, the City also stipulated that PVC pipe cannot be laid/installed in a manner that curves the pipe. The PVC pipe watermain is to be laid in a similar manner that a ductile iron pipe would be installed with special fittings at bends and minimal deflections at pipe joints. PVC pipe has a smaller allowable joint deflection than ductile iron pipe. PVC pipe typically has 1-2 degrees allowable deflection per joint. (less than half the allowable deflection of DIP) Without physically curving the PVC pipe alignments can only be accomplished via the addition of joints in the pipe. The waterline alignment includes maximum joint spacing to accomplish the proposed alignments. For these shortened joints, you will likely have to use bell restraints (EBBA Iron Megalug or equivalent).

**10. Conduit Marker**




PVC CONDUIT
END LOCATOR DETAIL
NOT TO SCALE

**11. General Contractor Minimal Self Performance Requirements –**

The self-performance requirement was established to ensure the prime contractor maintains an appropriate level of direct involvement and responsibility throughout project execution.

At this time, the City believes concurrence with MoDOT will be necessary. MoDOT requires the prime contractor to perform a minimum of 30% of the total contract work with their own forces and equipment. This means that the prime contractor is permitted to subcontract up to a maximum of 70% of the project work to approved subcontractors.

**12. Contract Duration or Time Extension**

The contract duration was established after evaluating the anticipated scope of work, utility coordination, seasonal construction considerations, and the 76 ECID board and City's desire to complete this high-profile corridor improvement in a timely manner.

While we recognize that utility coordination, weather, and unforeseen subsurface conditions present risks on any urban reconstruction project, these risks have been considered in establishing the contract time.

Utility owners have been actively involved throughout the design process and will continue coordinating relocations in accordance with the project schedule. In a 7.7.26 meeting with the utility companies, it was stated, “Once the duct bank is installed White River is prepared to take down their line”. Both Liberty and WRVE said that they would not charge for pole truck reinforcement or minor adjustments. The weekly coordination meeting will help to identify the needs and timelines. This will assist in keeping the construction contract risk and phasing at acceptable levels. A copy of the Utility meeting recording and transcript is included with this Addendum 2.

Also stated in the meeting was that there are no known issues with procurement of materials or supplies from any of the utility companies.

The construction contract is only for getting the items built in the contract. The sub-surface installation of utilities will be between the City and the Utility companies. Coordination is expected for phasing the undergrounding during construction to limit delays. The goal is to do this as quickly as possible. Delays because of natural disasters cannot be accounted for or quantified. Currently, the City believes the established contract duration remains appropriate and achievable.

13. **Traffic Queue Requirements –**

The traffic queue requirements were included to minimize impacts to the traveling public along one of the City's busiest transportation corridors. Traffic conditions will be monitored throughout construction, and any required adjustments to traffic control will be evaluated collaboratively by the Contractor and Engineer. The intent of the specification is to encourage proactive traffic management rather than impose arbitrary penalties. The design of the project is that there is always one lane of traffic both “East and West” shifting lanes with the use of the center lane.

As with other contract requirements, any circumstances outside the Contractor's reasonable control will be evaluated in accordance with the contract provisions governing changes.

14. **July 7, 2026, Utility Meeting Discussion and Results –** A utility coordination meeting was held on July 7th. Information from that meeting is presented below for the Contractor/Bidder’s reference.

    a. **Meeting Transcript**
    See attached transcript

    b. **Meeting Recording**
    https://gre.egnyte.com/fl/WcRX7YMVFmvC

    c. **Engineering and Design Phase Agreement with Utility**

**Purpose:** Establishes responsibilities for designing the relocation of utility infrastructure before construction begins.

- Utility company performs engineering and design required for underground relocation.
- Design must coordinate with the City's roadway improvement plans.
- New facilities are intended to provide **like-kind service** with no unnecessary betterments.
- City reimburses the utility company for eligible engineering and design costs.

- Cost estimates are provided in advance and adjusted if additional design work becomes necessary.
- Utility company prepares plans, specifications, and construction documents for its facilities.
- Work is coordinated with City staff and project engineers to minimize conflicts.
- Agreement establishes ownership and responsibility of utility facilities throughout the design process.

### d. Construction Phase Agreement

**Purpose:** Defines how the underground utility relocation work will be constructed and funded.

- Utility company installs new underground electrical facilities within City-provided duct banks.
- Utility company furnishes labor, equipment, materials, and specialized electrical installation.
- City provides funding for eligible construction costs through an escrow process.
- Utility company installs:
    - Underground primary cable
    - Transformers
    - Switchgear
    - Junction cabinets
    - Service connections
- Existing overhead facilities are removed after successful transfer to underground service.
- City inspector monitors construction progress and verifies completed work.
- Additional compensation may be requested if project scope or costs increase.
- Utility company retains ownership and long-term maintenance responsibility of its electrical system.
- Warranty, liability, and indemnification responsibilities are clearly defined between the parties.

### e. Liberty Utilities Engineering Services Agreement

**Key Provisions**

- Liberty Utilities performs engineering services for relocation of existing utility infrastructure.
- Relocation is necessary to accommodate the City's roadway improvements.
- Engineering includes:
    - Utility investigation
    - Design

    - Coordination
    - Relocation planning
- Utility design is coordinated with roadway, drainage, and other utility improvements.
- City reimburses Liberty Utilities for approved engineering costs.
- Work must comply with City standards and applicable utility requirements.
- Engineering deliverables support future construction and utility relocation activities.
- Agreement establishes schedule, payment procedures, and responsibilities for both parties.

**Attachments**

1. Landscape Plan Revisions (7) Sheets
2. Landscape Technical Specification Replacement/Additions
3. Utility Coordination Meeting Transcript

**There are no other clarifications or changes included with this Addendum.**

**PUBLIC WORKS/ENGINEERING DEPARTMENT**
STREET MAINTENANCE | ENGINEERING | FLEET MAINTENANCE | CAPITAL PROJECTS | CAD

# MEMORANDUM

FROM: City of Branson
TO: Planholders
DATE: July 10, 2026
SUBJECT: Request for Bid 2860-05A, 2860-05B, 2860-05C & 2860-05D W 76 Country Blvd Segments 1 & 2

Please note that due to delays in receiving final landscaping and irrigation plans, the bid opening date for the combined W. 76 Country Blvd Segments 1 & 2 project has been extended to Friday, July 31, 2026 at 9:00 a.m.

**PERFORMANCE & MAINTENANCE BOND**

KNOW ALL MEN BY THESE PRESENTS:

THAT We, the undersigned, _____of _____, hereinafter referred to as "Contractor", and _____, a corporation organized under the laws of the State of _____ and authorized to transact business in the State of Missouri, as "Surety", are held and firmly bound unto The City of Branson, Missouri, hereinafter referred to as "Owner", in the penal sum of _____ Dollars $(_____), lawful money of the United States of America for the payment of which sum will and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally by these presents.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the above bonded Contractor has, on the _____day of _____, 20___, entered into a written contract with the aforesaid, a copy of which is hereto attached and made a part hereof for the project of:_____
_____
_____
as designated, defined, and described in the said contract and the conditions thereof, and in accordance with the specifications and plans.

NOW, Therefore if said Contractor shall and will, in all particulars will, duly, and faithfully observe, perform and abide by each and every covenant, condition and part of the said contract, and the conditions, specifications, plans and other contract documents thereto attached or by reference made a part thereof, according to the true intent and meaning in the case, then this obligation shall be and become null and void; otherwise, it shall remain in full force and effect:

PROVIDED further, that the said surety, for value received, hereby stipulates and agrees that no change, extension of time, alternation, or addition to the terms of the contract, or the work to be performed thereover, or the specifications accompanying the same, shall in any way affect its obligations on this bond and it does hereby waive notice of any change, extension of time, alteration, or addition to the terms of the contract, or to the work, or to the specifications.

PROVIDED further, that if the said Contractor shall construct or cause to be constructed and completed the improvement in accordance with specifications for like improvements, and to the lines and grades shown on the plans, all to be done subject to the approval and acceptance of the Engineer, and shall construct said with such materials in such manner that same shall endure without need of any repairs for the period of one (1) year from and after the completion of said improvement and acceptance thereof; and if said improvement shall endure without the need of

repairs for the period of one (1) year from and after completion and acceptance thereof as aforesaid, then this obligation shall be void, otherwise to be in full force and effect.

IN TESTIMONY WHEREOF, the Contractor has hereunto set his hand, and said surety has caused these presents to be executed in its name, and its corporate seal to be hereunto affixed, by its attorney-in-fact duly authorized to do so at _____, on this _____ day of _____, 20____.

Contractor

By _____
Title _____

_____
Surety

By _____
Attorney-in-fact

By _____
Missouri Resident Agent

(Accompany this bond with the attorney-in-fact's authority from the surety company certified to include the date of the bond).

# RE 4515.000 Highway 76 Streetscape Project – Utility Coordination Meeting Request-20260707_140051-Meeting Recording

July 7, 2026, 7:00PM

1h 10m 26s

**John McCart** started transcription

**Mike Beaty** 0:09

Do you know how many people are invited, John? I mean, are we, it says we got 14, is that everybody?

**John McCart** 0:16

Let me see here, let me pull it up, make sure I got it.

Yeah, everybody accepted, so...

KJ

**Kurt Jacobsmeyer** 0:26

Okay.

**John McCart** 0:27

There was a few that didn't accept, so I can't really, but yeah, we're right around, we're right around 13 that did accept.

MW

**Michael Woods** 0:29

Stop.

Start.

We kicked that off.

**Mike Beaty** 0:37

King.

Right.

We pull something else up here.

Um...

Sounds like people are still joining. We'll give them a few more minutes. Let me get this.

**Kurt Jacobsmeyer** 1:00
Okay.
Go on.

**Todd Chandler** 1:14
John, can you record the meeting as well?

**Mike Beaty** 1:17
He's, yeah, he's already doing it.

**John McCart** 1:18
I've already got it. It's already under, yeah.

**Todd Chandler** 1:20
OK, perfect. Sorry.

**Michael Woods** 1:31
I do that.
And it disappeared half with you.

**Mike Beaty** 1:41
Wright.

**Michael Woods** 1:45
Monster update.

**Mike Beaty** 1:49
Does everybody think everybody's on, John?
Looks like we got 17 people.

**John McCart** 1:56
Yeah, we're well above how many accepted, so...

**Mike Beaty** 1:59
All right.
Um...

**Kurt Jacobsmeyer** 2:03
Right.

**Mike Beaty** 2:05
All right, it looks like the city's on, so...
I just, for convenience, and I'm not going to write them all down because it'd take forever, but if everybody can kind of go through and introduce themselves so that we know who's on the meeting. I'm Mike Beaty with Great River Engineering.

**Michael Woods** 2:13
Okay.

**Kurt Jacobsmeyer** 2:26
Bing.

**Mike Beaty** 2:32
Spencer, can you?
Just kind of go down the list here.

**Spencer Jones** 2:37
Yeah. Yep, Spencer Jones with Greg River Engineering.

**Todd Chandler** 2:47
I'm Todd Chandler with Great River Engineering.

**Kurt Jacobsmeyer** 2:50
So.

**John McCart** 2:50
John McCart, Great River Engineering.

**Mike Beaty** 2:55
Yeah.
No.

**Joe Donavant** 2:57
Joe Dominant, Wright Electric.

**Eric White** 3:01
Eric White, Liberty Utilities.

**Kurt Jacobsmeyer** 3:04
Okay.

**William Endicott** 3:05
Well, into Liberty Utilities.

**Kurt Jacobsmeyer** 3:09
Per Jacob Smart Liberty Utilities.

**Towler, Bill** 3:13
Bill Toler, Brightspeed.

**Eric Graves** 3:13
Fair grades, Summit Natural Gas.

**Mike Beaty** 3:21
Bill Tyler, was that you that tried?

**Towler, Bill** 3:24
Yeah, yeah, Bill told her Bright Speed.

**Mike Beaty** 3:25
Okay.

Yeah.
Look, we got a KP. Who's KP?

**Michael Woods** 3:41
That's kind of a power probably with the city, Mike.

**Kendall Powell** 3:43
Yeah.

**Mike Beaty** 3:44
Okay, sorry.

**Kendall Powell** 3:45
Yeah, City utilities, water, sewer.

**Mike Beaty** 3:47
All I see is...
Wright.

**Jake Neff** 3:55
This is Jake Neff, a project engineer at Olson.

**Mike Beaty** 4:00
And who, hey, Jacob, who are you representing? Are you with Liberty or are you with one of the other utilities?

**Jake Neff** 4:10
Um, uh, contractor for roles for Liberty, um, but I'm with Olson.

**Mike Beaty** 4:13
For.
Well, I understood that, so you were with liberty. OK. Thank you.

**Jake Neff** 4:18
Yep.

**Diego Rascon** 4:21
Good afternoon, Mike. My name is Diego Rascon. I'm a senior engineer over at Olson and we're supporting Liberty.

**Mike Beaty** 4:21
I.
Hey.

**David Riggs** 4:31
I'm David Riggs with Olson, also supporting Liberty.

**Mike Beaty** 4:31
Slow.
Right.

**Jeff Schroeder** 4:38
Yes.
This is Jeff Schroeder, also with Olson representing Lumen.

**Mike Beaty** 4:44
Lumen, okay.
Look, we got an Alex Heppner. Alex, who are you with?

**Alex Hepner** 4:54
Yep, yep, I'm Alex Hepner. I'm with Summit Natural Gas.

**Mike Beaty** 4:58
Summit, okay.
Um...
All right, well, right now, we are in the middle of, thank you, everybody. We're in the middle of bidding this project. The city has advertised it for a bid opening next week, and we're
in the process of answering questions, making sure we've got everything covered. Project has been broken up into four separate contracts and just a little bit, a lot of

things going on. But probably the primary issue is the utility, of course.
Trying to get everything with this project would be put below ground and we want to make sure that we have everything updated and up to speed. There have been some questions that have come up from the contractors. Some of the contact information that we reviewed and got back in March, I guess, has changed.
And we need to make sure that we've got that updated so that the contractor will be able to contact you and coordinate. That'll be a key important part of this project.
The, I guess the 1st order of business is to ask where each of the utilities stands in terms of the relocation design. Is everybody ready for the relocation work to begin?

**William Endicott** 6:43
Hey Mike, will end the call for Liberty. Hey, we are supposed to be getting our final set this week from Olson. However, I know there were some comments last week on a section there next to the toy museum that needs some further discussion and a potential change and plan there.
Like I said, definitely, definitely needs discussed further, probably in a smaller group, but that's where we sat today.

**Mike Beaty** 7:09
Okay, yeah, I think, yeah, that was an area of conflict where we showed some, I guess they're existing, but they're right in where the new corridor was going. So we need to definitely need to make sure we have that addressed. I know our understanding that what that was going to be moved. So

**Kurt Jacobsmeyer** 7:21
Yeah.

**Mike Beaty** 7:31
But in that, that I think is going to be an important thing. And maybe you're right, we take that do a separate meeting between you and us and we can get that hammered out. It just has to happen quick. The intent is to bid this next a week from this upcoming Friday. So that

**William Endicott** 7:39
Yeah.

**Mike Beaty** 7:49
doesn't leave us a lot of time to get information out. It's already a big set of plans. So we really need to get that hammered out probably in the next day or so, so we can get enough information to give to the contractors so they can do a good bid.

**William Endicott** 8:06
Sure. Yeah. And I'm not sure anything that we would change would impact your contractors per se, if we get it out of the way. I just know that that the owners there were not real excited about giving us an easement in the 1st place and to go back and ask them for more. We might we might have some challenges there, but got some ideas in the back of my mind. We definitely need to talk about.

**Kurt Jacobsmeyer** 8:16
Yeah.

**Mike Beaty** 8:18
Question.

**William Endicott** 8:27
Mmh.

**Mike Beaty** 8:27
Okay, yeah.
Ohh.
What about Lumen?
I know there was some existing facilities on the north end near Shepherd of the Hills that were still in the corridor. And there was some question about the contact information. I think we put added a new contact, Mr. Dubois.

**Kurt Jacobsmeyer** 8:51
Yeah.

**Mike Beaty** 9:00
for Lumen National, and I want to make sure that that's still right.

**Jeff Schroeder** 9:01
No.
Yep.
Yep, either Tim or I would be good contact. Good contacts for Lumen. We did.
have a back and forth a few months ago about the far eastern part of the project.
That's the only spot where Lumen is located. And it did seem like there was one
crossing with a proposed
Water main.
But it was a very small section and Lumen does require.
protect in place or move around for pipes that are smaller than 24 inches.
So, um, I...
I believe you have our utility conflict analysis.

**Mike Beaty** 10:06
Yeah, we had one on the east end near where we're tying in where segment 3
stopped. And the use sent looked like a GIS based form, but our survey information
showed it back behind the right of way. And all of our new stuff was going

**Jeff Schroeder** 10:13
Mm-hmm.

**Mike Beaty** 10:25
in the existing right of way. So I think we're okay there. I think it's just a matter of the
scale and the preciseness of the GIS versus survey stuff. But then it's something we
may need to, if we think it's still a conflict, we may need to just do a quick locate in
the field and make sure that there's no
You know, we're not going to be digging that up.

**Jeff Schroeder** 10:48
Yep, I agree. Yeah.

**Mike Beaty** 10:51
So when I looked at what you said, I thought we were okay. I got information. I think

Roger Clark with the city received some information about some of your existing fiber at the north end near Shepherd of the Hills Expressway intersection. And

**Kurt Jacobsmeyer** 11:07
Pete.

**Mike Beaty** 11:10
that one, that one seemed more problematic to me than the one on the south end. So if we could look at that and make sure that that's going to be out of the way, you know, that's a.

**Jeff Schroeder** 11:16
North End.

**Mike Beaty** 11:24
Just want to double check that.

**Jeff Schroeder** 11:25
In Matt.
That might be Lumen Local, so we're we're just representing Lumen National.
I can, uh, I can ask around and get you contact information for Lumen Local.

**Mike Beaty** 11:41
Okay, I just have one. I have Lumen National is the only contact. I thought that they were consolidated. And so if there's another, if there's a separate entity that we need to get involved in,
That would, we really need to have that information ASAP, so...

**Jeff Schroeder** 12:03
K.

**Mike Beaty** 12:05
Um...

**Jeff Schroeder** 12:09

Yeah, I'm looking at R3GIS and Lumen National does not show anything on the north side.
So.
I'm assuming that's Lumen Local, which Olsen does not work with, so...
I will get with my Lumen people.

**Mike Beaty** 12:33
Bill, are you, I saw information that that BrightSpeed was handling all the lumen local work. Is that true or is that, is that?

TB

**Towler, Bill** 12:45
Well, okay, we used to be Lumen, so I don't, as far as I know, I don't know what Lumen Local means, unless he's just referring to Brightspeed.

**Mike Beaty** 12:52
No.

TB

**Towler, Bill** 12:58
So...

JS

**Jeff Schroeder** 13:01
It'd be.

**Mike Beaty** 13:01
Okay.

JS

**Jeff Schroeder** 13:03
All I know is I'm living national.

EM

**Edwards, Michael** 13:04
Yeah, we're two separate companies.

TB

**Towler, Bill** 13:06
Yeah, yeah, there is no such, well, as far as we're concerned, I don't know what lumen local means. So it in any local facilities would be bright speed.

**Mike Beaty** 13:19
And we've got all of your information. I think you and Charles and I, we got that worked out.

**Towler, Bill** 13:21
Yeah, yeah, you've been working with Charles, yeah, and I don't think he's on here, but I forwarded him the meeting, but anyway.

**Jeff Schroeder** 13:28
Yeah.

**Mike Beaty** 13:33
Okay.
All right, Jeff, can you?
Can you please check in on that? Because that's something that it's hard to keep track of the changes. We have a lot of different companies here, but we want to make sure we got everything identified. Got about a week to get that hammered out. So if you could help us with that, I'd really appreciate that.

**Jeff Schroeder** 13:58
Yeah, and I might reach out to see what you're talking about on the north side.
But.

**Mike Beaty** 14:08
Okay.
Ohh.
Anybody else on your plans? I know Liberty's kind of catching up. Is that everybody else? As far as I know, we've gotten everything from everybody. I know we got stuff from Bright Speed, Luma National, we had the one conflict there on the southeast side, and I think that's okay.
And there's, from what you Jeff said, that there's nothing else in that corridor. We just need to clarify about the Lumen Local, what that might entail separate from Brightspeed. Is there anybody else that has any issues that you're aware of? I'm going to share, and I don't know.

Let me look here and make sure I'm not...
kind of talking about all these together, but I'm going to share the conflict drawing that we knew beforehand. We kind of talked about this in the pre-bid meeting. But in terms of the status of everybody's plans, you guys are all ready
to begin the project. Is that correct? Is anybody who's not ready as far as you know, besides the things that Liberty's got to work out yet?
Silence is golden. I guess that means we're doing good. Cheryl, just go ahead, Bill.

**Towler, Bill** 15:39
Well, hey, this, this, I got a question for you. When you say ready, it sounds like the timeline of projects, not for over a year for us to actually.
come out and start placing cables.

**Mike Beaty** 15:56
Well.

**Towler, Bill** 15:56
So, whether or not we don't have all the material or anything by any means.

**Mike Beaty** 16:01
Yeah, I don't, I don't think it's going to be a year. I imagine when they start, as soon as we get sections done, they're going to, they're going to want to start doing the switchover. I mean, they're not going to, they'll contractor, I imagine, and this, some of this will be
certainly up to the contractor that gets the bid. We're anticipating them to have their own phasing plans and, you know, one contractor may have five or six different trenchers going in or utility folks putting conduit stuff in in different places.
and trying to get it done as quickly as possible. Now, ultimately, we want to have everything off the poles, the poles gone, everything underground and pavement in place within a year. And so, you know, when you're looking at a project this scope and this many,
I would envision that, you know, if you start at the south end, that the south end would be done before you're done at the north end or vice versa, and that there'd be segments that you could certainly start installing wire before that year end is up. You know, we certainly want to have the poles down within a year.

And so if the poles are down within a year, we'd have to have the wire and stuff in at that time. Now, I don't think you're going to be ready to pull wire, you know, the day before Thanksgiving, but I would imagine there'd be segments and sections that you could start doing the switchover.
early in the spring and begin to see a lot of that progress take place. Now, that's what I envisioned, and that kind of the intent was not to have this just drag on and take a long time, because, you know, once you get the utilities down, they still have to finish the pavement, and then there's landscaping that goes in place, and
and some other some of the other public art and features like that are going to be going in place within that year time frame. So all of that could be going on while you're pulling wire underground and switching over services and what have you.
It's what I had envisioned. So are you, Bill, are you planning on not being ready to start pulling wire until this time next year? Or is that?

TB **Towler, Bill** 18:30
Yeah.
Well, let's hear from Joe and White River on how, because we go after, we don't get to go in before they do. So it's really dependent on his.
Schedule, because they go in first, and then...
I don't think, well, I'll just let Joe go, go at it before I answer.

JD **Joe Donavant** 18:52
Okay.
Thanks, Bill. Appreciate that.

TB **Towler, Bill** 18:55
Haha.

JD **Joe Donavant** 18:57
Buck.
plan will be as you know, as soon as sections are done enough to where they could, they'll start pulling wire, they'll start terminating, installing, you know, the equipment, that type of thing and get to, you know, maybe get to a point at some point to be able to do some cutover, but the major cutover probably won't be done until,
I would say probably spring of next year where we could be completely out of the

way. But all a lot of it depends on.
how quickly they get the duck bake in, they get everything else plumbed and set in the way of our vaults and access ability. You know, everybody's going to be on top of each other, so we got to watch that. But
That we, material-wise, we've got.
Probably 90% of the material on hand, some of the key opponents will be in.
To be delivered in October, November.
that were ordered last year, the way it switch gears and stuff like that.
Um...

**Mike Beaty** 20:07
No.

JD **Joe Donavant** 20:08
Start pulling wire, they're gonna start pulling wire.

**Mike Beaty** 20:10
OK, that.

JD **Joe Donavant** 20:12
Does that make sense to you, Mike?

**Mike Beaty** 20:15
Yeah, I mean, that's kind of what I had envisioned now to Bill's question. You are going like you have existing poles with your power facilities on the poles. So to follow up with what Bill said, and this is what I had envisioned, but I hadn't really

JD **Joe Donavant** 20:29
Mhm.

**Mike Beaty** 20:36
you know, discussed that, you know, you will be the first ones to take your stuff off of your polls, but then you'll leave your polls up until all the telecommunication folks get off. And then when everybody's got theirs off, that's when you'll take the poll

down. But you'll be the first one
Off the pole, is that right?

**Joe Donavant** 20:57
That, yeah, that would be correct, yeah.

**Mike Beaty** 20:59
Okay, so the coordination will need to be dependent. We'd have to get the duck banks in. Once the duck banks are installed, you know, off of a section where you can start doing sections of the city in, then you can start pulling those down. And then you would go in and begin pulling your wires, setting your
transformers and what had the in place. And then after that would follow the utility companies. And I don't know, is that after that it's first come first serve or is there a pecking order in the telecom communities or companies?
Or has that been decided yet? This is just first come, first serve.

**Joe Donavant** 21:43
Yeah, I don't have an answer, obviously, for that, but...
That'd be up to them. I mean, there's...

**Towler, Bill** 21:48
In.

**Joe Donavant** 21:49
You know, kind of when we did Section Three, I believe we started pulling wire and not too far behind us was.
Was Optimum pulling their stuff in, you know, so...
Depending on what direction we start at, we'll obviously determine that a little bit, but...
That would be up to them, I guess, to decide who's going to do what after we're done.
or started.

**Mike Beaty** 22:19
Um...

Well, one of the requirements of the contract with the contractors that they have a weekly coordination meeting. And I would anticipate that the phasing for the removal will be dependent upon the
you know, the progress of the contractor and whatever his phasing is. You know, if they have, I don't know, maybe they hired 10 different utility trenching companies and they're doing it all at once, but I don't imagine they'll do that. They'll probably start in one area and then
coordinate with you guys and each of the utilities. I would imagine you'd have somebody who would be available at those weekly meetings so that they'd be able to coordinate when you did your work as well. That's one of the most important reasons of having
good contact information for all of the utilities in the corridor so that we make sure we have kind of a clearinghouse for each utility. I know some of the utility contacts we've had as many as three or four, and that's going to be a little bit confusing, I think, when we start actually doing the digging and put everything underground.
So I'd like to make sure that if we have any last minute updates, we can get that information out and have it set. And those people would be the ones with your, each of your individual companies that would be, you know, responsible for that coordination with a contractor.
and making sure that everybody's aware, you know, who to call or who's working on the next phase and kind of get that queue set up so that it's as efficient as possible.
And then, you know, the city is not really able to do that right now because the, you know, the phasing and the scheduling will kind of be dependent on the contractor that's awarded the bid.
And so, but we want to have everything in place. So is, you guys have seen the contact list for the plans, is, are those contacts that are there, the utility contacts are there on the front cover, are those current? I know we changed Luma National to Tim Dubois.
But Altus and White River, Joe, I know you're still in it, but, and I think you know, Bill's on the phone here. Is everybody else the same?
Contacts that we have on there.
Didn't we know anything has changed?

MW **Michael Woods** 25:14
OK.

Hey, Joe, it's Roger with City. I got a question for you.
Back years ago when we established the latest segments for 76, it was based off of where I know when I worked with Ron Daniels on it and you two years ago, it was where it was easy for you to go
from underground back to aerial. So, and I'm trying to get my mind around this power and things up in sections. Is there points along these segments that you have to get to before you can heat up whatever it is you put in the ground?

JD **Joe Donavant** 26:05
Yeah.

MW **Michael Woods** 26:05
Because I know, I know like the boundary between 1:00 and 2:00 was over there by the toy museum and that was, do you have to make it from the Ferris wheel to that point before you can start heating anything? Because I, if I remember correctly, the.

JD **Joe Donavant** 26:13
Wright.
Yeah, that's that's.

MW **Michael Woods** 26:25
The communication companies have to have power before they can, they have to have your power live before they can do anything.

JD **Joe Donavant** 26:30
Wright.
Right. On the on section 2, it can actually probably be segmented a little bit more than section 1. Section 1 is going to have to be from, you know, everything in place underground from Butterfly Palace to across from the Toy Museum.

MW **Michael Woods** 26:55
Okay.

JD **Joe Donavant** 26:55
the whole stretch of what the existing overhead is to get in the cut over, cut her over

to the customers. But section 2 can be done in sections because there's actually some of that that we could probably actually, it's not feeding anything right now. You know, Jim Stafford property, you know, next.
caravel theater and the hotel that was next to it and stuff like that. We can do it. We can do that probably a little bit more sections involved where we have the old still heated to a point and then cutting over to the new.
once it's in place.

**Michael Woods** 27:34
Okay.

**Joe Donavant** 27:37
That'll just be it.
Meet me sitting down with line with line crews and coming up with a plan of how to.

**Michael Woods** 27:44
OK.

**Joe Donavant** 27:46
Yeah, what we're gonna have to get in place to cut over.
Early on.

**Michael Woods** 27:52
And I apologize, I don't remember all the names that are representing Liberty, other, I mean, I know you, Kurt, but can you guys speak to that as well?

**William Endicott** 28:06
I don't think there'll be any holdup on our side. I think a lot of our build, since we're coming down the back, can be done.

**Michael Woods** 28:06
But.

**William Endicott** 28:14
and all wire pulled and all that before we tie back in. Like I said, we're still waiting on

our final plans later this week, and we'll sit down with our local guy there and the line crews to kind of go over schedule and steps, but I don't see that being an issue today.

**Michael Woods** 28:24
Just.
Some of the contractors had questions too for of, you know, if you need a temporary poll move, maybe if it was.
or held up, like what that looks like if you guys are willing to work, if there's a cost involved in that, a cost to the city. Little Pete's Road is a great example. I'm not even sure who's pole it is. Somebody pulls right on the corner and that might need to be adjusted a little bit. Can anybody

**Joe Donavant** 28:59
Yeah, that's ours.

**Michael Woods** 29:00
Being to the OK.

**Joe Donavant** 29:02
That's White Rivers. Yeah, we just got to look. I got to look at that and see how we where we can move it.

**Michael Woods** 29:02
That's yours.
I saw.
Okay.

**Joe Donavant** 29:10
Relocate it.
And you know, there's if there's a potential where something's got to be held up in that section that can be addressed, you know, and we just got to have enough notice to go three or four day notice, obviously, for to get it lined up with we've got we got spare trucks where we can.

**Michael Woods** 29:14
Yes.
The.
Yeah.
Cheryl.

**Joe Donavant** 29:32
We can hold up the pole if we have to. Just look at it and see what's going on. You know, we can do something temporary to hold it up or whatever. And then as far as we're concerned, there's no additional cost to the city, but it's already we're already in a contractual base on the on the cost for that anyway. So

**William Endicott** 30:13
Yeah.

**Michael Woods** 30:14
Thanks, Scott.

**William Endicott** 30:15
Yeah, typically we don't charge to hold a pole. I can't, Eric, I may have you speak up. I think we, and I'm out of Joplin, then we can typically do one pole at a time because we don't have enough extra trucks for that. Eric, are you guys the same down there?

**Michael Woods** 30:25
The.

**Eric White** 30:26
Yeah, yeah, yeah. We're pretty much the same. Like I said, as long as we have a few days notice, kind of see what we have to do.
You know, and it kind of depends on the poll as well, because we have several risers going down through there, primary risers. So that will, that's a bit of a challenge right there. You know, if one of those polls are what you're needing to try and move, I don't see it happening.

**William Endicott** 30:53
Yeah, I don't.

**Michael Woods** 30:53
And I, I'm assuming.
Well, I'm not going to assume. Barring a natural disaster and all your guys are tied up, tending to a tornado or ice storm, is your typical average response time, what does that look like if the contractor calls you and says, hey, we're going to need this pole brace? What kind of lead time do we need to be making sure they give you?

**Eric White** 31:22
I would like, kind of like with Joe there, I would like at least, you know, three days. So we're in that vicinity, I mean.

**Michael Woods** 31:31
Right. And that's reasonable and we'll make sure the contractors know that we won't say three days, we'll say two week look ahead, you need to have that aligned out and we know some things will pop up, but we will probably officially put that in an addendum because
That's a huge risk on everybody's part. And so that was one of the Brennan concerns. I think, Mike, did we cover that concern well enough that that was one of the biggest concerns?


**Mike Beaty** 32:04
Yeah, I think so.

**Michael Woods** 32:05
Buck.


**Mike Beaty** 32:09
Yeah.
Um...

**Michael Woods** 32:12
Or Todd.

**Mike Beaty** 32:14
Yeah, the.

**Michael Woods** 32:19
Mike, I put a couple of things in the chat for everybody. If you could just provide your current information and then also the responsible contact for this project.

**Mike Beaty** 32:32
Thank you, Cheryl. I saw that. I saw it and I was going to mention that, but I didn't want to interrupt everybody else, but thank you for keeping us on track on that. Appreciate it.

**Michael Woods** 32:34
The people.

**Mike Beaty** 32:49
Ohh.

**Michael Woods** 32:50
Skip.

**Mike Beaty** 32:51
All right, well, I'm gonna this is the the.

**Michael Woods** 32:53
Okay.

**Mike Beaty** 32:57
exhibit that we put together for the pre-bid meeting where we identified areas where we know there's going to be some conflicts and there's a couple of areas near Shepherd of the Hills where we've got, you know, power underground conduit that

would be a little bit of a conflict and may require temporary
diversion of supply. The yellow green is gas locations where we have a crossing. And gas company folks, you guys were going to be deep deeper than 7 foot on everything. Is that that's still the plan, isn't it?

**Michael Woods** 33:30
Okay.

**Eric Graves** 33:41
I'll be honest with you, this is the first one that I can remember that I've said it on this in a while. So I'm going to say that was James he was probably talking to, and if that's what he said we would do, then I will stick to that statement.

**Mike Beaty** 33:58
Well, I mean, there weren't a lot of conflict, but that was the intent. You guys had to have your own crews putting most everything in. And so there are very few segments in the corridor where we have gas as part of the utility trench.
because most of the areas you guys were going to be deep, deeper than our 54 inches, 4 1/2 foot. So we were going to clear you by two foot. I think that that was what was stated and intended. I think there's only a couple of places.

**Michael Woods** 34:35
Yeah.

**Mike Beaty** 34:37
you know, where we have the wide corridor where you guys are in there, but everything else is going to be deeper and you're going to do it with directional.

**Eric Graves** 34:45
I know you can.

**Mike Beaty** 34:46
Directional boring type installation, 'cause not the most real big two-inch.

**Eric Graves** 34:52

Yeah, it's a it should be all the two inch, so I mean, what you what you're saying, that does sound correct, yes.

**Mike Beaty** 34:53

Which?

Yeah.

Okay. These conflicts.

EG

**Eric Graves** 35:02

I know Jared, I know Jared went down there and he done a bunch of locates for us for this purpose of what you're explaining. So I'm going to say that we should be good to maintain what we told you.

**Mike Beaty** 35:18

Okay, these highlighted areas here are areas where we thought we had conflicts with your existing system, not your new system. So if you're, you know, doing directional board and you're down below and getting these out of the way, then these might be a mute point for you guys. But it'll be something that would definitely need to coordinate with a contractor.

who's doing the overall project as well. And so they'll be calling you and if you can get in and get yours out of the way, then that might, you know, might not really be an issue at all. And

EG

**Eric Graves** 35:45

Okay.

Well, that is our game plan. I mean, one of the main questions I had for the group is, do we have a, I know it's kind of bounced around a little bit, but do we have kind of a time frame on when the job's going to let and when we could actually get started?

**Mike Beaty** 36:19

Well, we're probably be anticipated being starting right after Labor Day. And Mike, I'll let you talk to that a little bit. I know you guys set the schedule, we're looking at opening bids, but then there's the award and signed contracts and everything, but then

Probably the middle of September is when you start seeing activity. Mike, is that is that right or do you have, yeah?

**Michael Woods** 36:48
Yeah, that's super reasonable. There is, you know, our goal at the city was to have all the contracts and everything locked in. I mean, we're down to one contract now to move forward. So a successful bidder arrives and bids well.

**Eric Graves** 36:52
No.
Address list.

**Michael Woods** 37:06
and doable. And then there's for those that didn't attend, there's one year on there that's given a lot of people some heartburn. But there's a two-month incentive on there for half $1,000,000 early finish. So hopefully, literally next year at this time, if they got the early incentive on the 10th,

**Eric Graves** 37:13
Yeah.
Is.


**Mike Beaty** 37:16
I.

**Eric Graves** 37:23
No.
That's.

**Michael Woods** 37:28
we would be completely done. So that kind of tells you.

**Eric Graves** 37:28
Ohh, ****, stop.
No.

**Michael Woods** 37:33
Where were?

**Eric Graves** 37:34
Okay, so let's just say if I schedule continuously for first week of October of us getting in there doing stuff, would you guys see any heartburn with that?

**Mike Beaty** 37:35
The.

**Michael Woods** 37:46
S.

**Mike Beaty** 37:55
I think that that would be fine, but go ahead, Mike, I'm sorry.

**Michael Woods** 37:55
Download.
Yeah, that would all be like contractor based, right? So they're going to come up with their timeline that's there to hit their objective of 10 months or a year, whichever one. I don't think they're going to want to go one day over a year. And so, but that is truly the hard burn on the contractor side is will utilities
and respectfully say this to everyone that's on here, will they keep up with their pace and keep working with them to keep that thing going? We also told the contractors that came that they would be able to box out the poles and work around them for the time being for, you know, sidewalk or whatever, until you guys were
out of the way, but they, they, some of the contractors have already voiced that they think it's unfair that their livelihood or their bonus or their timeline is going to be dependent on, you know, multiple, multiple, multiple companies. But the city's ultimate point is that it's reopened to pedestrians and
Vehicles no later than one year.
We understand there'll be a little bit of touch up and Roger Clark sitting in here and that's and some of the people that are in this meeting and worked on the segment 3. Segment 3 coming off the polls were years later, right? And so

I don't want to do that. I want it all done with the city and the ECID and the mayor and the boards all want it done as quickly as possible. And I get that. So we that's why we kind of went about this approach a little bit differently that we reached out to you all starting in 2020 2021 the fall 21.

**Eric Graves** 39:37
Shook.

**Michael Woods** 39:43
And so now here we are in 26th and raid roll.

**Mike Beaty** 39:49
Big project, take a long time, put together a lot of moving parts.

**Michael Woods** 39:52
Yeah, and it's hard to keep everybody that hasn't been involved with you on this side and seeing how everybody's willing to work together because sometimes people get burned by one person's not ready or the other one's not. But it sounds like we're in really, really good shape.

**Joe Donavant** 40:12
Hey, Mike, Betty, this is Joe.

**Mike Beaty** 40:16
Joe.

**Joe Donavant** 40:17
The what you got on your screen, can you send that out?
I know we see, I see that at the, you know, you had that up to the meeting in the city the other day.
I actually don't have, I don't have that.
Drawing showing those conflict areas like he's got in.

**Mike Beaty** 40:36
Okay, yeah.

**Joe Donavant** 40:37
send that out so then I can have that so I can kind of keep track of where, you know, what they're thinking that might be a conflict. I know the Paul Larry, Little Pete Road is going to have to be addressed fairly quick. That's probably going to be one of the first things we're going to have to probably deal with once everything gets rolling, figure out what we're going to do there about moving it, which everybody is going to be involved with that.

**Mike Beaty** 40:38
Dean.
project.

**Joe Donavant** 40:59
in the way it comes because they're going to have to move with us.
Just a heads up for them that that's going to have to have to happen. It's going to have to shift out and get out of the out of the roadway.
But are you are you is it still doing a planned bore to go underneath the expressway? Is that correct?

**Mike Beaty** 41:20
Yes, yes.

**Joe Donavant** 41:24
Update from us on that, Mike. I talked to my boss and we are comfortable with this, the pipe being in the steel board. We don't need the divider plates.

**Mike Beaty** 41:25
You.

**Joe Donavant** 41:35
Like we talked about, so...

**Mike Beaty** 41:36
Okay.

**Joe Donavant** 41:39
You don't have a problem with that?

**Mike Beaty** 41:43
It look.

**Joe Donavant** 41:46
I know that's one of the conflict areas on that north side that existing underground primary that's there. It's probably going to be conflict with the, you know, they're going to have to work around the border around that, obviously.
Do you know what the depth of that board is going to be across there?

**Mike Beaty** 42:03
40, 42 inches. Does it need to be deeper?

**Joe Donavant** 42:06
Matt.
Well...

**Mike Beaty** 42:08
I mean, it could probably be deeper, but it's, you know, every bit you go deeper, the more expensive it gets, but I mean, if there's a...

**Joe Donavant** 42:14
Yeah.
Probably need to do a load, probably need to do a locate on site and try to see if we can determine what the depth of that primary is now. You know, it was when it was put in the ground, it was, it should have been at least three foot in the ground, but it's, I'm sure that it's been grades been changed where it's probably deeper than that. in that area when that when all that intersection was built, but we would just have to figure that out, obviously.

**Mike Beaty** 42:46
Okay, yeah, so we, this is, you know, 14 inch pipe for you. We've got all of the other

casings for the telecommunication being a 20 inch, and then we've got the water in a 24 inch.

**Joe Donavant** 43:06
Yeah.


**Mike Beaty** 43:06
Set, so.

**Joe Donavant** 43:07
There were there.
Is that your, that's the pipe, the conduit count that you've got in there, what I'm saying? Okay, so there would be a three inch in there also.


**Mike Beaty** 43:13
Yes, yes.
I think we put the three in, we can.

**Joe Donavant** 43:20
Airfare.
You.


**Mike Beaty** 43:24
I think it's over here.

**Joe Donavant** 43:24
I'd rather be over with us if we can. That would be better.
Got 2 connects, but you don't have a, I don't remember what the design, was a W2, I think maybe, or can't remember what the designation I'd have to look at the.


**Mike Beaty** 43:40
Yeah, that'd be so alright, so I'll need to add.

**Joe Donavant** 43:40
What you have?

Yeah, you need to add a three-inch in that with us.
That's the future fiber pipe for us, for the electric side, not connect.

**Mike Beaty** 43:56
So this just, I think all we had was for this section for you guys was the four conduits through here. So you're just saying add the third one in the bore here?

**Joe Donavant** 44:11
Yeah, the three. Yeah. Yeah, it should be 4 fours and the three traversing all the way through there.

**Mike Beaty** 44:19
What about through this park?

**Joe Donavant** 44:21
Same, same deal.
Yep.
And that's what it should be on the on the drawings.

**Mike Beaty** 44:29
Okay, double-check here.
OK.

**Joe Donavant** 44:36
Yeah.
Is that the final drawings that you're showing there?

**Mike Beaty** 44:50
Yeah.

**Joe Donavant** 44:53
Is that available? I think Todd sent me some links, maybe.

**Mike Beaty** 44:57

Yeah, this should, you should add this. Todd, did you send these plans out to all the utilities when we sent them? I thought we did.

**Todd Chandler** 45:05

They've got access to demand star, obtain it just like the contract, the contractors would. The reason I'm trying to point people to demand star is because if any addendums are issued, they're automatically notified when those addendums come out as a plan holder. So if anybody doesn't have...

**Joe Donavant** 45:10

Wright.

**Todd Chandler** 45:24

access to Demand Star, it's free. And once you get access, you can search for the city's project and you can download all the contract documents, including the plans and any addendums that have been issued to date. Because otherwise it's just too difficult for us to make sure that every utility provider is getting
the updated documents.
So if anybody has any questions on getting access to Demand Star, certainly reach out to myself or I'm sure Cheryl at the city would be able to help any utility providers get access to that too.

**Michael Woods** 46:05

Yeah, we can share real quick. You just go to ransomo.gov. And if Mike, if you're okay with us sharing the screen, we can show how simple it is. So sure.

**Mike Beaty** 46:12

But yeah, go ahead.

**Michael Woods** 46:19

Schudy.

**John McCart** 46:21

The.

**Michael Woods** 46:22

This one here. Sure. So grantsamo.gov, once you hit that main landing page, there's bids and purchasing right on the top.

You're gonna click that and kind of scroll just a little bit down to the red demand star.

demand star will pull up and this is all of our bidding items that are going on right now. And you work your way down to

Derrick.

Go.

Beer.

It's like you gotta go up.

That's it.

**Todd Chandler** 47:04

Yeah, and Cheryl provided the link in the chat to the Teams meeting.

**Michael Woods** 47:07

Right there, very first one, or second one, sorry.

**John McCart** 47:09

Yeah, thank you.

**Mike Beaty** 47:14

In.

**Michael Woods** 47:14

Click that and then you work yourself down and you can get all the addendums and the plans and download them all. You don't have to sign up.

**Todd Chandler** 47:22

And keep in mind there's four different solicitations for this one project.

**Michael Woods** 47:22

Yeah.

And the reason for the split for those that weren't at the meeting is because we have four different funding sources. Basically, we have two tasks from BODOT, governor's money involved in it, bonding money, and actually more money, the city money in there too. So utility money.
Hopefully that helps a little bit for how to get there. A couple clicks and you're there fast.


**Mike Beaty** 47:59
And Joe, to your point, that that attachment exhibit that you were we were looking at was included in the first addendum. So that should be you should be able to get it there along with all of the plans.

JD **Joe Donavant** 48:10
Okay.
Yeah, thank you.


**Mike Beaty** 48:24
Two questions.

MW **Michael Woods** 48:25
Because.


**Mike Beaty** 48:29
Um...
Okay.
I know, looking at this, I'm gonna, Mike, can I share the screen? Are you done? Do you think I'll share mine back, you know?

MW **Michael Woods** 48:43
Ohh, yes, sir. Hold on.


**Mike Beaty** 48:46
Okay, so I know the concern about the, there is an existing underground utility kind of comes through this area at Shepherd of the Hills and then crosses. And that was the area that we were

thinking that had to do with Luma. Now, I think Bright Speed has everything tied up in the corridor and I think we're okay there. So if this isn't something that's staying, we still need to probably make sure we coordinate having the temporary service here in some way.
when we're putting a new trench through there. So.
Sounds like maybe we have it identified, but we just still need to do that coordination during construction.
Man, we're almost, I think we've gone through most everything.
Talking about upcoming work, we talked about conflicts, Liberty. I think we need to maybe set up another, just a mini meeting with all the Liberty folks on that, make sure we get that worked out. Mike, is there anything that you need to talk about other than what we talked about on the utility agreements?
We talked about the temporary services and being able to do that, but is there anything else we need to talk about?

**Michael Woods** 50:17
I think we're in good shape. The last one to come in will be Liberty, and they sound like they're getting really darn close. So that's really good. And I think, William, you said that there'll be no changes to our plans, which is great news. So

**Mike Beaty** 50:34
Yeah.

**William Endicott** 50:36
Yeah, the only plan change we'll have is right there at the toy museum and getting that little piece out of the front there. That's going to take some doing. But I think we, like I said, I think I've got some ideas on how to get that done. May take a little help from you guys as well. Maybe if it comes to that, but we can talk through it.

**Mike Beaty** 50:36
One.

**Michael Woods** 50:42
So.
To.

**Mike Beaty** 50:47
Okay.

**Michael Woods** 50:48
The.
Buck.
Yeah, well, let us know. We know that property owner very, very well. So.

**William Endicott** 50:57
OK.

**Mike Beaty** 50:57
Mhm.
Yeah.

**Michael Woods** 50:59
Like you guys do, so...

**Mike Beaty** 51:02
Um...
OK, now, ohh, go ahead.

**Todd Chandler** 51:04
Mike, one item that, one item I wanted to bring up based on coordination with contractors that I'm getting on questions is, and I haven't even, I mean, I've kind of mentioned the idea to Mike Woods this morning. Is there any advantages to letting the utility companies go out in front of the contractors and delaying when the contractors would start their project by like anywhere from three to six months for some of these temporary relocations. The reason I'm asking that is because contractors had said this would...
This would be a way to eliminate some of the risk that they see in their side of it on this completion date if some of these relocations could occur in front of the beginning of their contract.

**Michael Woods** 51:56
Buck.
Todd, I think honestly, like they have to have the duck to do, one of them has to have the duck to provide new power to move anything around. So you got to do.

**Todd Chandler** 52:08
Yeah, yep, I get.

**Mike Beaty** 52:09
Alright, so that.

**Todd Chandler** 52:11
I think it would mainly benefit maybe Liberty Utilities because I don't think that they're going in the duck bank.

**Michael Woods** 52:17
Right, they're going in the back, so that just means they could take, they could possibly take down stuff early, but...

**Todd Chandler** 52:24
Yeah.

**Michael Woods** 52:24
I, I don't see.
You probably should have this conversation offline, but I really don't see the benefit to the contractor on that. They're saying, well, get out of my way so I have a clean slate. That's impossible. But without the duck bank, they don't have anything. So

**Todd Chandler** 52:37
Yeah.

**Mike Beaty** 52:41
Yeah.

**Todd Chandler** 52:41
Yeah, that's kind of what I was thinking too, but I just wanted to ask the question.

**Mike Beaty** 52:47
Yeah, I think it's a chicken or the egg type thing. And I think that we need the, what this contractor is going to do, that kind of the whole intent, the city was going to provide the duct bag to let the other utility be able to get out of the way. And so if they could get out of the way without the duct bank, he wouldn't need it. So

**Todd Chandler** 53:07
Yep.

**Mike Beaty** 53:07
If, but I think that that brings up a point during construction that there there's going to be need to be a lot of face time with the whoever the contractor is to make sure we coordinate everything and make sure it goes efficiently.

**Michael Woods** 53:09
Matt.

**Mike Beaty** 53:27
I think Roger, you had something, sounded like Roger was going to say something.

**Michael Woods** 53:31
No, I exactly what you said. I think there's, I mean, I understand their concern, but I think there's opportunity to get ahead of this far enough.
And from, I'm going to base all this back on the last segment. I mean, all the utility companies were excellent to work with and went out of their way to work with the city and the contractor. So
I, I don't think this is that big of an issue, as long as they properly plan for it.

**Mike Beaty** 54:06
Yeah.

Yeah, the the yeah.
Um...

**Michael Woods** 54:12
Buck.

**Mike Beaty** 54:13
Anything else? I I did something about it.
Okay.
One of the things that came up was material procurement and availability. And I'll just say we did the design where the city's putting the conduit, the trenching, the bedding, and every structure that the conduit will land.

**Michael Woods** 54:24
Yes.
Bye.

**Mike Beaty** 54:41
into the ground. They're not putting any of the equipment in, the switch gear, the transformers, the, you know, the connecting panels. They're just, it's a hole for the wiring and a base for whatever goes in that pull box is all the city's putting in with their project. Everyone else is providing the
Connecting equipment and the wire, and if that's...
Some of the contractors got the impression from talking to some folks that that's different. So I just I wanted to put that out there. You know, the plans that we put together were were setting up the conduit duct bank to let provide the conveyance and means for all the utilities to go underground. But

**Michael Woods** 55:31
Time.

**Mike Beaty** 55:31
any of the other equipment, we're not purchasing or we're not installing the transformers or anything like that. Go ahead, Bill.

**Michael Woods** 55:33
The.

**Towler, Bill** 55:40
Okay, so I'm just making sure from the previous...

**Michael Woods** 55:42
Okay.

**Towler, Bill** 55:47
I'm not, you know, the phase numbers, I'm not sure, but in front of Clay Cooper, all that, those.
Same specs for the hand holes and the pedestals are is what to be used now. I'm just making sure you just described that you're putting in conduit and the boxes, so I'm just making sure that it's the same spec that was carried on to this project.

**Michael Woods** 55:55
Mm.

**Towler, Bill** 56:13
I mean, it's been a long time since I provided it, but they haven't changed, and I'm just making sure.

**Mike Beaty** 56:17
Yeah, no, we're referencing each of the utility standard specs. And so, I mean, if something's changed since then, then yeah, we probably need to make aware, but we've got the dimensions shown, all of the all of the boxes that we've got shown.

**Todd Chandler** 56:37
Yeah.

**Mike Beaty** 56:38
in the utility corridor, you know, these are drawn to scale. So based on the scale of what you gave us, so these will be the turnouts and we don't, we're not showing each

suite coming out, but we're showing the approximate location of each of them. And these are to scale based on the dimensions that
that we got from each of your specification of plans. And I don't, I didn't do a table or a booklet of all of the different cut sheets because the...
Figured they were standard, but if we need to do that, that might be something we could we could put together an addendum as well, but I don't.

**Towler, Bill** 57:12
Yeah.
Well, OK, they were on the previous year, they were given a tactical data sheet and it worked and they got the right one. So I'm just making sure that that's carrying on. You know, there may be. As long as the dimensions are right, yeah, that's one thing, but there were.


**Mike Beaty** 57:20
Yeah.

**Towler, Bill** 57:35
that particular brand and all that good stuff.


**Mike Beaty** 57:41
Well, I mean.

**Towler, Bill** 57:41
It's bound to have carried across.


**Mike Beaty** 57:44
I may reach out to him. It will just for clarification purposes include that in the next addendum so that there's no question.
But...

**Towler, Bill** 57:59
Well, I really don't have a reason to suspect it won't be right, but because the first one, the first project was right. So I don't know. I just making sure it's carrying on through.

**Mike Beaty** 58:09

Well, and that's not, you know, we want to make sure it's right. So no, I want to make sure we get it right too. So if there's question or confusion, maybe we can add that clarification. So I might be bugging you all individually to send me your cut sheets for all of that and make sure we've got the latest standard.

For them.

**Towler, Bill** 58:31

Okay.

**Mike Beaty** 58:40

Um...

All right, one of the things.

Um...

Are there any problems with material procurement availability? I know with White River Joe, the spec red conduit is was a.

was an issue. I don't, I think that's still available now.

Okay.

I think we'll be able to get that less something.

**Joe Donavant** 59:11

Yeah, if for some reason that that can't be obtained, then we just need to...

We kind of talked about a couple of alternatives, you know, to...

To take its place.

**Michael Woods** 59:22

Yes.

**Joe Donavant** 59:25

You know, conduit with...

**Michael Woods** 59:25

When I looked in, when I looked into it, what, two months ago? A couple of months

ago at least, I had a couple of local suppliers that were able to gain it, lead times 4 to 8 weeks.

**Joe Donavant** 59:31
Yeah.
Yeah.
Yeah, yeah, yeah, there's one City Electric Supply in Hollister can get a get a hold of it. That's one on the minute, Roger, that you talked to.

**Michael Woods** 59:47
Yeah, yep.

**Joe Donavant** 59:48
Yeah, yeah, and then uh, just uh...
For information on our end, the...

**Michael Woods** 59:55
So.

**Joe Donavant** 59:58
We'll be supplying to the contractor all our vaults that are going to be used, and the three inch conduit and three inch fittings for our fiber pipe, not connect, but for electric. So whenever they get established to where they have a material drop off site, then we can get that stuff.
Delivered out there on site, so they have it.
That's part of the...
contract with the city between us and the city to provide that that stuff in in the with the cost of the doing the project.
They'll have to acquire the four-inch conduit and the four-inch fittings and the...
The adapter fittings for the for the steel conduit or the steel fittings, the 90s and the 45s, that's all part of the contractor to get to provide.
But we'll do the vaults. We'll supply the vaults in the three-inch content. That should be known already, but...
That should be in the...
Paperwork of the contract, the bid.

**Mike Beaty** 1:01:13
Well, yeah, the...
The way it's set up the bid, the quantities are for the contractor to provide that. So what you're saying is different than what we've got. So you're providing the vaults, not just the equipment, but you're actually providing the vaults?

**Joe Donavant** 1:01:22
Yeah.
Okay.
Yes, that's in that vault cost is in the cost of to the city between us and the city on the contract for the project.

**Todd Chandler** 1:01:38
Bing.

**Mike Beaty** 1:01:43
OK.

**Joe Donavant** 1:01:44
And then the three-inch conduit were provided because...

**Michael Woods** 1:01:46
Open.

**Joe Donavant** 1:01:48
We don't actually have fiber on the overhead portion. This is an added adder for us to be in for the in the ground, but we're providing the conduit and the fittings for the all the three inch.

**Mike Beaty** 1:01:54
See.

**Michael Woods** 1:01:55

S.
Yeah.

**Joe Donavant** 1:02:04
Like I said, we'll stack that up once they get a site of where they're going to have all their material.
No.
We will get that delivered out there to that that site for them to have on hand.

**Mike Beaty** 1:02:19
Okay.

**Michael Woods** 1:02:20
We need to make sure that hits the addendum, Todd and Mike.

**Mike Beaty** 1:02:23
Yeah, yeah, no, well, no, that's because that is that is something that's that is different, so we'll that'll be an addendum item.

**Joe Donavant** 1:02:29
Yeah.

**Michael Woods** 1:02:30
I know we said we sent over the contracts with them to you guys just a few weeks ago, maybe 2 weeks ago or so.

**Mike Beaty** 1:02:37
Yeah.
Yeah.
Um...
But the other.
The other, the four-inch.
And the sweeps, the stainless steel or the steel sweeps for it are part of what the contractor's doing. It's not, you're not providing those.

**Joe Donavant** 1:03:02
That is correct, yep.
Yeah.


**Mike Beaty** 1:03:09
Yeah.

**Michael Woods** 1:03:11
Is Liberty the same way? There's no issues with procurement.


**Mike Beaty** 1:03:11
Yeah.

**Michael Woods** 1:03:16
Are you all?

**William Endicott** 1:03:17
Nope, not that I can see so far.


**Mike Beaty** 1:03:22
What about, Bill, what about your group? Is there going to be any issues?

**Towler, Bill** 1:03:31
I haven't checked lately on lead times, but it hasn't been an issue.

**Michael Woods** 1:03:32
The.

**Towler, Bill** 1:03:38
So I'll say no at this time, but I'll be checking in on it pretty soon.


**Mike Beaty** 1:03:45
Okay.

**Eric Graves** 1:03:48
Hey, gentlemen, this is Derrick with Summit. Do you guys need anything else for me on this call? Because if not, I've got another meeting I need to join on too, if that's all right.

**Mike Beaty** 1:03:48
All right.
Mel.

**Michael Woods** 1:04:01
Derrick, if you would just please put your contact information in, that would be great.

**Eric Graves** 1:04:10
I can do that.

**Michael Woods** 1:04:11
Thank you. Thanks, Derrick.

**Mike Beaty** 1:04:12
Thank you, Eric.

**Eric Graves** 1:04:13
Alright, thank you.

**Mike Beaty** 1:04:16
All right.
Action items. I think we're going to issue an addendum with that clarification. So that'll be Todd and I will be working on that for the White River Electric. If you guys can go through, I think there needs to be another meeting between the Liberty Group.
designers and our team to make sure we have all those conflicts identified. I don't know, Mike, you or Roger want to sit in on that with us or not.

**Michael Woods** 1:04:50
Place Roger on there, if I can make it.


**Mike Beaty** 1:04:52
Okay.

**Michael Woods** 1:04:54
She'll try.
Come back.
Send it back up, yeah.


**Mike Beaty** 1:05:05
Uh, who, um, there, there's a...

**Michael Woods** 1:05:07
I guess, is there anything before we get to start losing more people? Is there any other concerns, Todd or Mike, that you guys can think of that we haven't covered that we can make sure that's in the addendum that will slow down some of the jitters?


**Todd Chandler** 1:05:27
Not that I'm aware of.

**Michael Woods** 1:05:27
Or Spencer.


**Mike Beaty** 1:05:27
I see.
Yeah, I think we've covered it, and it sounds like everybody's kind of ready. I think probably the biggest thing is make sure we have contact information, because I think that's going to be the critical thing all the way through this project, making sure we have the right people who are engaged and involved in doing the coordination. So

**Michael Woods** 1:05:49

And then the city, once we get the contract up and running along with Great River and everyone else, like we hold the biweekly or sometimes weekly, depending on how quick the pace is going, meetings and we do it teams just like this, you can join or not join. You want to listen to
to the meeting all the time. It's never a closed meeting. That's how we did downtown. So I know this is a little bit bigger of a beast than that. So want the utility companies and everybody that's there to know whoever you want to send, if you want to spend the time to know what's going on every week, that's part of our deal with the contractor.
Oops.

**Mike Beaty** 1:06:33
Go ahead.
Who at Liberty, like if we want to schedule this meeting?
Sans contacting six or seven different people, who's the lead person that we can kind of coordinate with? And you can make sure you have the people in the meeting with us that need to be there. Who should I coordinate that with?

KJ

**Kurt Jacobsmeyer** 1:06:56
Yeah.

WE

**William Endicott** 1:06:56
Yeah, Mike, Will Endicott, just send it to me, if you would. I think you guys have my information on the cover sheet there, but I can drop it in the chat if not.

MW

**Michael Woods** 1:06:57
Yes.
I've got it. I've got it.

**Mike Beaty** 1:07:04
Yeah.

WE

**William Endicott** 1:07:05
OK.

**Mike Beaty** 1:07:06
Yeah.
Yeah, okay. I'll send a, I'll coordinate with you after this meeting and Roger and the guys on our team and make sure that we've got everything involved, everybody involved that needs to be involved and get all of your stuff worked out.

**William Endicott** 1:07:22
Yup.

**Mike Beaty** 1:07:24
Anything else? So I don't, we're kind of gone past our hour limit and I appreciate everybody staying on and this I think is a good meeting. But is there any other issues that we need to address before we call it quits?

**Michael Woods** 1:07:39
I want to say thank you to everybody that got on so quickly to help us along here. And Liberty, thank you for bringing the forces so we can work through all this real quick.

**William Endicott** 1:07:53
Absolutely, thanks for the time, guys.

**Michael Woods** 1:07:53
It.

**Mike Beaty** 1:07:55
OK, well...

**Michael Woods** 1:07:56
And again, please put your please put your information in the chat.

**Mike Beaty** 1:08:03
Right. Well, with that, I'll adjourn the meeting. Thank you everybody.

**William Endicott** 1:08:03
Tim.

**Michael Woods** 1:08:10
Thank you.

**William Endicott** 1:08:10
Thanks, guys.

**Todd Chandler** 1:08:11
Thank you.

**Michael Woods** 1:08:13
So I can't get your.
I hear.
Here.

**John McCart** stopped transcription

EMERY SAPP & SONS

**W. 76 Country Blvd. – ESS Bid Concerns**

After completing a comprehensive review of the Spirit of 76 project documents, ESS has determined that, in its current form, the project presents a level of risk that prevents us from submitting a responsible and competitive bid. We are committed to partnering with owners and designers to deliver successful projects, and we believe the following concerns should be addressed before we can confidently participate in the bidding process.

## 1. Contract Duration – 365 Calendar Days

The current contract duration of 365 calendar days is not sufficient to reasonably complete the work given the project risks and uncertainties. It is not ESS's practice to simply include anticipated liquidated damages in our bid, which could potentially exceed **$3 million**. Instead, we prefer to work collaboratively with the Owner and Engineer to establish a schedule that is realistic and achievable.

The primary schedule risks include:

- Unclassified rock excavation.
- Unknown utility conflicts.
- Utility relocations performed by utility companies.
- Weather-related delays.

One effective way to reduce both schedule risk and overall project duration would be to require utility companies to complete temporary relocations before ESS begins construction or before contract time starts. This proactive approach would significantly improve productivity and reduce unnecessary delays.

## 2. Proposed Water Line Conflicts

Based on locations identified in Addendum No. 1, the proposed water line is too close to the existing water line. This presents a significant construction and safety risk for the following reasons:

- Increased potential for damaging the existing water main and crew safety during construction.
- Difficulty maintaining uninterrupted water service to existing businesses.
- Increased risk of emergency repairs, schedule impacts, and public disruption.


5350 E State HWY AA | Springfield, MO 65803 | o 417.833.9915| f 417.833.9981

We recommend evaluating whether the proposed water line can be relocated farther from the existing line or whether temporary utility relocations can be implemented to allow the existing line to be abandoned before construction proceeds.

## 3. Pedestrian Safety and Access

Pedestrian safety is one of the highest-risk components of this project and requires a comprehensive traffic and access management plan before construction begins.

Critical concerns include:

- Maintaining ADA-compliant temporary pedestrian routes.
- Protecting pedestrians adjacent to open excavations.
- Maintaining safe access to businesses throughout construction.
- Reducing contractor and owner liability associated with public interaction within the work zone.

ESS believes the safest and most efficient solution is to prohibit pedestrian traffic within active work zones. Pedestrians should be directed to the opposite sidewalk using designated crossings. Establishing clearly defined work-zone limits and implementing a comprehensive pedestrian management plan for the duration of the project would greatly improve safety, reduce liability, and increase construction efficiency while minimizing schedule impacts.

## 4. Traffic Queue Requirements

The specification limiting traffic queues to 15 minutes creates substantial uncertainty. Based on existing traffic conditions, we anticipate this threshold may be exceeded even when construction activity is minimal.

We request clarification regarding the required corrective actions if traffic queues exceed the specified limit. Specifically:

- Will additional traffic control devices or detours be required?
- Who determines when corrective action is necessary?
- Will contract time or compensation be adjusted if traffic conditions outside the contractor's control impact compliance?

Without clear guidance, this requirement introduces unnecessary risk and uncertainty that will ultimately increase project cost.

## 5. Landscape Plans and Bid Date

EMERY SAPP & SONS

The landscape plans were issued only recently, and the associated JSPs and revised quantities will not be available until later this week. ESS cannot accurately evaluate and price this scope without these documents.

To allow all bidders sufficient time to prepare complete and competitive proposals, ESS respectfully requests that the bid date be extended to **August 7**, contingent upon the timely release of the remaining landscape documents.

## 6. Self-Performance Requirements

Given the number of subcontractors that will be required to successfully complete this project, we respectfully request that the contractor's self-performance requirement be reduced to **20% or less**. This adjustment would better reflect the scope and specialized nature of the work, encourage broader competition among qualified bidders, and allow contractors to utilize the most qualified specialty subcontractors while maintaining overall responsibility for project execution.

## Closing

ESS values the opportunity to pursue this project and appreciates the effort invested by the Owner and Engineer in its development. Furthermore, we request that any ideas and/or solutions would be kept confidential. Our intent is not to delay the project but to ensure that the contract documents support a safe, efficient, and successful construction process. Addressing the concerns outlined above will significantly reduce project risk, improve constructability, and enable ESS to submit a competitive and responsible bid.

We appreciate your consideration and welcome the opportunity to discuss these items further in pursuit of a mutually beneficial solution.

Sincerely,

Jack Rowden
Estimating Manager
Jack.rowden@emerysapp.com
C: 417-840-8903

Cc
Paul Moody
Chris Landwehr
Cory Moffatt
Kane Thompson

July 8, 2026

Mr. Jack Rowden
Estimating Manager
Emery Sapp & Sons
5350 E State Hwy AA
Springfield, MO 65803

Re: W. 76 Country Blvd – Response to Bid Concerns

Mr. Jack Rowden,

Thank you for your letter regarding the Spirit of 76 Improvements Project and for taking the time to thoroughly review the contract documents. We appreciate the thoughtful feedback and your willingness to work collaboratively toward a successful project. The City of Branson and the Great River Engineering Team have carefully considered each of the concerns raised and offer the following responses.

**1. Contract Duration – 365 Calendar Days**
The contract duration was established after evaluating the anticipated scope of work, utility coordination, seasonal construction considerations, and the 76 ECID board and City's desire to complete this high-profile corridor improvement in a timely manner.

While we recognize that utility coordination, weather, and unforeseen subsurface conditions present risks on any urban reconstruction project, these risks have been considered in establishing the contract time.

Utility owners have been actively involved throughout the design process and will continue coordinating relocations in accordance with the project schedule. In a 7.7.26 meeting with the utility companies, it was stated, “Once the duct bank is installed White River is prepared to take down their line”. Both Liberty and WRVE said that they would not charge for pole truck reinforcement or minor adjustments. The weekly coordination meeting will help to identify the needs and timelines. This will administer keeping the construction contract risk and phasing at acceptable levels. A copy of the Utility meeting recording will be added to Addendum 2.

Also stated in the meeting was that there are no known issues with procurement of materials or supplies from any of the utility companies.

The construction contract is only for getting the items built in the contract. The sub-surface installation of utilities will be between the City and the Utility companies. Coordination is expected for phasing the undergrounding during construction to limit delays. The goal is to do this as quickly as

possible. Delays because of natural disasters cannot be accounted for or quantified. Currently, the City believes the established contract duration remains appropriate and achievable.

**2. Proposed Water Line Conflicts**
The proposed water main alignment was developed through coordination with the City's Utility staff while balancing existing utilities, proposed roadway improvements, drainage infrastructure, and available right-of-way.

The intent is to maintain continuous water service throughout construction. Contractors should anticipate sequencing work and utilizing temporary connections or other accepted construction practices where necessary to accomplish this objective.

Should field conditions warrant minor alignment adjustments during construction, those will be evaluated in coordination with the Engineer of record and City Utilities Department. The locations were determined with best known location. During construction, potholing may need to be required.

**3. Pedestrian Safety and Access**
The City agrees that pedestrian safety is a critical component of this project. The contract documents require the Contractor to maintain ADA-compliant pedestrian accessibility consistent with the approved Traffic Control Plan, the MUTCD, and all applicable accessibility requirements. Temporary pedestrian routing will be reviewed throughout construction as work progresses**.** Temporary crosswalks can be installed to help with routing, at the contractors' risk, discretion, and cost for installation and engineering. The City does not want to dictate contractor means and methods. While temporary sidewalk closures may be permitted in active work areas, maintaining **reasonable pedestrian access to businesses remains the project objective**. The Contractor will be expected to coordinate pedestrian routing with the Engineer while minimizing impacts to the public and adjacent businesses.

**4. Traffic Queue Requirements**
The traffic queue requirements were included to minimize impacts to the traveling public along one of the City's busiest transportation corridors. Traffic conditions will be monitored throughout construction, and any required adjustments to traffic control will be evaluated collaboratively by the Contractor and Engineer. The intent of the specification is to encourage proactive traffic management rather than impose arbitrary penalties. The design of the project is that there is always one lane of traffic both "East and West" shifting lanes with the use of the center lane.

As with other contract requirements, any circumstances outside the Contractor's reasonable control will be evaluated in accordance with the contract provisions governing changes.

**5. Landscape Plans and Bid Date**
The remaining landscape documents, revised quantities, and associated special provisions are being finalized and will be issued through an official Addendum prior to bid opening. The City recognizes the importance of providing sufficient time for bidders to review all contract documents. After consideration of the remaining schedule, the City has evaluated whether an adjustment to the bid

opening is necessary following issuance of the final landscape package. Any revisions to the bidding schedule will be communicated through a formal Addendum. At this time the city is preparing to extend bidding submittal to **Friday July 31, 2026.**

**6. Self-Performance Requirements**
The self-performance requirement was established to ensure the prime contractor maintains an appropriate level of direct involvement and responsibility throughout project execution.

At this time, the City believes concurrence with MoDOT will be necessary. MoDOT requires the prime contractor to perform a minimum of 30% of the total contract work with their own forces and equipment. This means that the prime contractor is permitted to subcontract up to a maximum of 70% of the project work to approved subcontractors.

**Closing**
We sincerely appreciate ESS's review of the project documents and the constructive nature of your comments. Input from prospective bidders helps identify areas requiring clarification and contributes to a more successful project for all parties. Any modifications or clarifications to the contract documents determined necessary will be communicated to all prospective bidders through the formal Addendum process to ensure fairness and consistency throughout procurement.

We appreciate your interest in the W. 76 Country Blvd Segments 1 and 2 Improvements Project and look forward to your participation.

Sincerely,

**Michael R. Woods**
Director of Public Works/Engineering
City of Branson

SECTION 033715 – ARTIFICIAL ROCKWORK

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes shotcrete artificial rock boulders.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include shotcrete design mixes.

B. Engineering/Shop Drawings: Show fabrication and installation details for shotcrete artificial rock boulders.

1. Structural analysis data signed and sealed by the qualified Missouri licensed professional engineer responsible for their preparation.
2. Detail fabrication, bending, and placement of reinforcement; number and location of splices.
3. Boulder elevations, sections, and dimensions.
4. Thickness of structure coat and finish coat.
5. Finishes.
6. Indicate locations of proposed construction joints and connection details.
7. Locations and details of connection hardware attached to structure.
8. Erection sequence for special conditions.
9. Relationship to adjacent materials.

C. Mock-ups: Contractor shall provide a half-size mock-up for owner review and approval prior to commencing work.

1.4 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Qualification data.

C. Work examples.

1.5 QUALITY ASSURANCE

A. Standard: Comply with ACI 506.2, “Specification for Shotcrete,” unless otherwise indicated.

B. Installer Qualifications: Installer must have a minimum of 10 years’ experience in shotcrete artificial rock installation. Submit minimum five (5) examples of similar past work.

C. Mock-ups: Build mockups to demonstrate aesthetic effects and set quality standards for fabrication and installation. Mockups must be approved by Owner's Representative prior to beginning work.

PART 2 – PRODUCTS

2.1 REINFORCING MATERIALS

A. Stainless Steel Reinforcing Bars: ASTM A955/A955M, Grade 60, deformed.

B. Stainless Steel Wire: ASTM A1022/A1022M.

C. Stainless Steel Welded Wire Reinforcement: ASTM A1022/A1022M.

2.3 SHOTCRETE MATERIALS

A. Portland Cement: ASTM C150/C150M; Type I.

1. Fly Ash: ASTM C618, Class C or Class F.
2. Slag Cement: ASTM C989/C989M, Grade 100 or Grade 120.
3. Silica Fume: ASTM C1240, amorphous silica.

B. Normal Weight Aggregates: ASTM C33/C33M, from a single source, and as follows:

1. Combined Aggregate Size: ACI 506R or ASTM C1436, Grading No. 1 sieve analysis.

C. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in shotcrete, complying with ASTM C1116/C1116M, Type III.

D. Admixtures: ASTM C1141/C1141M, Class A (liquid) or Class B (nonliquid), but limited to the following admixture materials. Provide admixtures for shotcrete that contain no more than 0.1 percent chloride ions. Certify compatibility of admixtures with each other and with other cementitious materials.

1. Accelerating Admixture, Conventional: ASTM C494/C494M, Type C or Type E.
2. Pozzolanic Admixture: Fly ash, slag cement, and silica fume as limited in "Portland Cement" Paragraph in this article.
3. Coloring Admixture: ASTM C979/C979M, synthetic mineral-oxide pigment or colored, water-reducing admixture, free of carbon black; color stable, nonfading, and resistant to lime and other alkalis.
4. Air-Entraining Admixture: As limited in "Shotcrete Mixtures" Article.

2.4 CURING MATERIALS

A. Absorptive Cover: AASTHO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd dry, or cotton mats.

B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

C. Curing Compound: ASTM C309, Type 1, Class B; clear, matte, solvent-borne, membrane-forming curing compound.

2.5 SHOTCRETE MIXTURES

A. Mix shall have successful track record of at least 3 similar decorative artificial rock projects with a minimum of 5 years of exterior exposure in a climate similar to Branson, MO. References shall be provided upon request.

B. Design Mixtures: Prepare design mixtures for each type and strength of shotcrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 506.2.

C. Cementitious Materials Replacing Portland Cement: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent.

D. Limit water-soluble chloride ions to maximum percentage by weight of cement or cementitious materials permitted by ACI 301.

E. Design-Mixture Adjustments: Subject to compliance with requirements, shotcrete design-mixture adjustments may be proposed when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant.

F. Shotcrete Mixture: Proportion mixture to provide shotcrete with the following properties:

1. Compressive Strength (28 days): 4000 psi.
2. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight wet-mix shotcrete having an air content before pumping of 7 percent with a tolerance of plus or minus 1-1/2 percent.
3. Synthetic Fiber: Uniformly disperse in shotcrete mix, according to manufacturer’s written instructions, at a rate of 1.5 lb/cu. yd.
4. Color of Finish Coat: As selected by Owner’s Representative from manufacturer’s full range of industry colors.

PART 3 – EXECUTION

3.1 STEEL REINFORCEMENT

A. Comply with CRSI’s “Manual of Standard Practice” for fabricating, placing, and supporting reinforcement.

B. Construct steel armature to result in climbable or non-climbable finished surfaces.

C. Clean reinforcement of loose rust and mill scale (for plain steel reinforcement), earth, ice, and other materials that weaken shotcrete bonding.

3.2 APPLICATION

A. Apply shotcrete applied by wet-mix process and according to ACI 506.2.

B. Apply temporary protective coverings and protect adjacent surfaces against deposit of rebound and overspray or impact from nozzle stream.

C. Apply wet-mix shotcrete materials within 90 minutes after batching.

D. Deposit shotcrete continuously in multiple passes, to required thickness, without cold joints and laminations developing. Place shotcrete with nozzle held perpendicular to receiving surface. Begin shotcrete work in corners and recesses.

1. Remove and dispose of rebound and overspray materials during shotcreting to maintain clean surfaces and to prevent rebound entrapment.

2. Remove and dispose of cuttings during the trimming or rodding process to prevent unconsolidated material from falling onto lower reinforcement.

E. Maintain reinforcement in position during shotcreting. Place shotcrete to completely encase reinforcement and other embedded items. Maintain steel reinforcement free of overspray, and prevent buildup against front face during shotcreting.

F. Do not place subsequent lifts until previous lift of shotcrete is capable of supporting new shotcrete.

G. Do not permit shotcrete to sag, slough, or dislodge.

H. Remove hardened overspray, rebound, and laitance from shotcrete surfaces to receive additional layers of shotcrete; dampen surfaces before shotcreting.

I. Do not disturb shotcrete surfaces before beginning finishing operations.

J. Sculpt climbable and non-climbable surfaces.

K. Installation Tolerances: Place shotcrete without exceeding installation tolerances permitted by ACI 117, increased by a factor of two.

L. Cold-Weather Shotcreting: Mix, place, and protect shotcrete according to ACI 306.1. Protect shotcrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperature.

M. Hot-Weather Shotcreting: Mix, place, and protect shotcrete according to ACI 305.1 when hot-weather conditions and high temperatures would seriously impair quality and strength of shotcrete.

## 3.3 REPAIRS

A. Repairs will be permitted provided structural adequacy of shotcrete and appearance are not impaired, as approved by Owner’s Representative. Remove and replace shotcrete that is delaminated or exhibits laminations, voids, or sand/rock pockets.

B. Mix patching materials and repair shotcrete so cured patches blend with color, texture, and uniformity of adjacent exposed surfaces.

## 3.4 CLEANING AND PROTECTION

A. Immediately remove and dispose of rebound and overspray materials from final shotcrete surfaces and areas not intended for shotcrete placement. Prevent damage to shotcrete artificial rock surfaces and staining of adjacent materials/surfaces.

END OF SECTION 033715

# SECTION 321316 – DECORATIVE CONCRETE PAVING – PIANO WALK

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Work specified in this section includes all labor, materials, equipment and services necessary to complete the proprietary Bomanite Micro-Top XT decorative concrete paving (or approved equal) including surface preparation, primers, cementitious topping, waterproof membrane, reinforcing fabric, and pigmented surface treatments.

### 1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at project site.
   1. Review methods and procedures related to decorative concrete paving including, but not limited to the following:
      a. Concrete mixture design.
      b. Quality control of concrete materials and decorative concrete paving construction practices.
   2. Require representatives of each entity directly concerned with decorative concrete paving to attend, including the following:
      a. Contractor’s Superintendent.
      b. Decorative concrete paving installer.

### 1.3 ACTION SUBMITTALS

A. Product Data: Manufacturer’s data sheets on each type of product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Samples for Verification: Provide 36-inch by 36-inch sample for each type of color indicated on the drawings.

C. Design Mixtures: For each decorative concrete paving mixture. Include alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

### 1.4 INFORMATION SUBMITTALS

A. Qualification Data: For qualified Installer, ready-mix concrete manufacturer, and testing agency.

B. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: The contractor for this work shall be a Bomanite Toppings System Certified Applicator approved by the Bomanite Company.
   1. Provide letter of certification from manufacturer stating that installer is a certified applicator of special concrete finishes and is familiar with proper procedures/installation requirements of the manufacturer.
   2. The Installer shall provide a qualified foreman or supervisor who has a minimum of five years' experience with decorative concrete finishes, and who has successfully completed at least five installations of high quality and similar in scope to that required.

B. Manufacturer Qualifications: A firm experienced in the support and training of a national installer network and manufacturing products required/listed to complete the work.
   1. The Bomanite Company.
   2. Or approved equal.

C. Source Limitations:
   1. Micro-Top XT related materials: Obtain each type of material of the same brand from one source from a single manufacturer.
   2. Do not interchange manufactured materials within the Micro-Top XT as all warranties whether expressed or implied will be null and void.

D. Ready-Mix Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM c94/C94M requirements for production facilities and equipment.

E. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.
   1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

F. Mock-up: Build mock-ups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards.
   1. Mock-up shall include entire system, including surface preparation, primers, cementitious basecoat, fabric reinforced membrane, cementitious topcoat, expansion/isolation joints and surface treatments.
   2. Notify Owner's Representative seven days in advance of dates and time when mock-ups will be constructed.
   3. Build mock-ups of decorative concrete paving in the location and the size indicated or, if not indicated, build mockups where directed by Owner's Representative and not less than 96" x 96".
   4. Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Owner's Representative specifically approves such deviations in writing.
   5. If the Owner's Representative determines that the mock-ups do not meet requirements, the Contractor shall demolish and remove them from the site and arrange to assemble more until approved.
   6. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on decorative concrete paving mixtures.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturers labels indicating brand name and directions for storage, mixing with other components and application.

B. Store materials to comply with manufacturers written instructions to prevent deterioration from moisture or other detrimental effects.

C. Dispense special concrete finish material from manufacturer factory numbered and sealed containers. Maintain record of container numbers.

1.8 FIELD CONDITIONS

A. Traffic Control: Maintain access for pedestrian traffic as required for other construction activities.

B. Environmental Limitations:
   1. Comply with manufacturer's written instructions for ambient temperature and other conditions affecting installation performance
   2. Concrete must be cured a minimum of 28 days as directed by manufacturer before installation of Bomanite Micro-Top XT can begin.

1.9 PERFORMANCE REQUIREMENTS

A. The product is required to retain water indefinitely provided no structural movement has compromised the system.

B. The product is required to have a pigmented topcoat that can be reapplied as wear dictates.

C. The product is required to have no reliance upon the topcoat for its waterproof properties.

D. The product is required to have a layer of protective cementitious coating over the membrane so as to protect it from incidental contact.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering materials required to be incorporated into the work include:
   1. The Bomanite Company (or approved equal).

B. Requests for substitutions will be considered in accordance with Job Special Provisions.

2.2 MATERIALS

A. Bomanite XP Primer: Water-based epoxy designed to improve the bond strength of the Micro-Top XT Pedestrian Deck System to the prepared concrete slab

B. Bomanite Repair Mortar MP Regular Set: A cementitious topping comprised of powders in multiple gradations, styrene butadiene admixtures and other modifiers designed to be a highly durable and water-resistant coating.

C. Bomanite Waterproof Membrane: A single component styrene butadiene rubber coating designed to be waterproof.

D. Bomanite Microtop-XT: Bomanite Poly Fabric: A polypropylene fabric designed to reinforce cementitious coatings and elastomeric membranes.

E. Requests for substitutions will be considered in accordance with Job Special Provisions.

2.3 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 (ACI301M) unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Consult General Contractor, Concrete Contractor, Engineer, and Owner's Representative with Bomanite installer present prior to pouring the concrete slab to which the Micro-Top XT is to be applied to. Ensure complete understanding of substrate preparation, finishing, control joint placement, penetrations, mechanical bases, slope to drains etc.

B. Examine slab prior to installation with Bomanite installer present for conditions affecting performance of the Micro-Top XT. Rectify conditions detrimental to timely and proper work. Do not proceed with installation of Micro-Top XT until unsatisfactory conditions are corrected.

3.2 SURFACE PREPARATION

A. Mechanically profile the concrete slab with planetary head grinders, hand-held grinders, shotblasting equipment or high-pressure water cleaning equipment to ICRI CSP1 or greater.

3.3 INSTALLATION

A. Apply the Micro-Top XT according to the manufacturer's proprietary internal application procedures including epoxy primer, cementitious basecoat, fabric reinforced membrane, cementitious topcoat and pigmented sealer.

3.4 JOINTING

A. Isolation and Expansion Joint Caulking: Install isolation joint caulking after the Micro-Top XT installation is complete. Use a two-component polyurethane such as Sonneborn NP2 or equal in a color complimentary to the Micro-Top XT color.

3.5 PROTECTION

A. General: Protect finished work from traffic until fully cured in accordance with manufacturer's recommendations. Protection of the finished surface is to be maintained by the Contractor until substantial completion of the project is met.

B. Remove and replace decorative concrete paving that is broken or damaged or does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Owner's Representative.

END OF SECTION 321316

SECTION 321401 – FLAGSTONE PAVING

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes the following:

1. Flagstone Pavers.
2. Mortar and grout.
3. Edge restraints.

B. Related Requirements:

1. Job Special Provisions and City of Branson Technical Specifications Provisions for concrete ribbon curb and concrete base under pavers.

1.2 REFERENCES

A. ASTM International, latest edition:

1. C 97, Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone
2. C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. C 170, Standard Test Method for Compressive Strength of Dimension Stone.
4. C 241, Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic
5. C 616, Standard Specification for Quartz-Based Dimension Stone.
6. C 880, Standard Test Method for Flexural Strength of Dimension Stone.
7. D 698 Test Methods for Moisture Density Relations of Soil and Soil
8. D 1557 Test Methods for Moisture Density Relations of Soil and Soil

1.3 SUBMITTALS

A. Product Data: Manufacturer’s catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products for the following:

1. Flagstone Pavers.
2. Mortar and Grout Materials
3. Edge restraints.

B. Samples for Initial Selection and Verification:

1. Flagstone Pavers: Three representative full-size samples of flagstone paver type, thickness, color and finish that indicate the range of color variation and texture expected upon project completion. Accepted samples become the standard of acceptance for the product produced.
2. Joint materials involving color selection.

C. Qualification Data: For Paving Installation Contractor:

1. Job references from a minimum of ten projects similar in size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

D. Product Test Reports: From an independent testing laboratory for compliance of flagstone pavers with ASTM C 616.

1.4 QUALITY ASSURANCE

A. Utilize a stone supplier having at least ten years of experience quarrying flagstone pavers on projects of similar nature or project size.

B: Source Limitations:

1. Obtain flagstone pavers from one source location with the resources to provide products of consistent quality in appearance and physical properties.
2. Obtain mortar and grout from one source with the resources to provide materials and products of consistent quality in appearance and physical properties.

C. Installer Qualifications:

1. Utilize an installer having successfully completed flagstone paver installation similar in design, material, and extent indicated on this project.

D. Mock-ups: Build mock-up to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Install an 8 ft x 8 ft paver area.
2. Use this area to determine joint sizes, lines, laying pattern and levelness. This area will serve as the standard by which the workmanship will be judged.
3. Subject to acceptance by owner, mock-up may be retained as part of finished work.
4. If mock-up is not retained, remove and dispose legally.

1.5 DELIVERY, STORAGE & HANDLING

A. Deliver Flagstone Pavers in manufacturer's original, unopened and undamaged container packaging with identification labels intact.

1. Deliver Flagstone Pavers to the site on palettes capable of transfer by forklift or clamp lift.
2. Unload Flagstone Pavers at job site in such a manner that no damage occurs to the product or adjacent surfaces.

B. Store pavers on elevated platforms in a dry location. If pavers are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

1.6 FIELD CONDITIONS

A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or

frost. Do not build on frozen subgrade or setting beds. Remove and replace flagstone paver work damaged by frost or freezing.

B. Weather Limitations for Mortar and Grout:

1. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
2. Hot Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6. Provide artificial shade and windbreaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F (38 deg C) and higher.

    a. When ambient temperature exceeds 100 deg F (38 deg C), or when wind velocity exceeds 8 mph (13 km/h) and ambient temperature exceeds 90 deg F (32 deg C), set pavers within 1 minute of spreading setting-bed mortar.

## PART 2 – PRODUCTS

### 2.1 FLAGSTONE PAVERS

A. Basis-of-Design Product: 'Arkansas Cherry' Flagstone Pavers as provided by SiteOne Stone Center (or approved equal). Refer to drawings for additional information.

1. The specified products establish minimum requirements that substitutions must meet to be considered acceptable.

B. Provide pavers meeting the minimum material and physical properties.

1. Type III Dolomitic Limestone.
2. Thickness: 2 inches.
3. Water absorption on 0.20% when tested according to ASTM C97.
4. Minimum Density: 170 pcf according to ASTM C97.
5. Minimum Compressive Strength: 33,000 psi according to ASTM C170.
6. Height tolerances +/- 0.5 in. Note: pavers must be set level. Height variance to be accommodated within setting bed.

### 2.2 EDGE RESTRAINTS

A. Paver Edge Restraint Basis of Design Product: Rigid Paver Edge (70971148 (245-950)) as manufactured by Techniseal (or approved equal). Refer to drawings for additional information.

B. Job-Built Concrete Edge Restraints: Comply with requirements Job Special Provisions and City of Branson Technical Specifications for normal-weight, air-entrained, ready-mixed concrete with minimum 28-day compressive strength of 3000 psi (20 MPa). Refer to drawings for additional information.

### 2.3 MORTAR SETTING BED MATERIALS

A. Portland Cement: ASTM C150/C150M, Type 1 or Type II.

B. Hydrated Lime: ASTM C C207, Type S

C. Water: Potable.

2.4 GROUT MATERIALS

A. High-Performance Cement Grout: ANSI A118.7, sanded.

B. Grout Colors: As selected by Owner’s Representative from manufacturer’s full range.

C. Water: Potable.

2.5 MORTAR AND GROUT MIXES

A. General: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing times, and other procedures needed to produce setting-bed and joint materials of uniform quality and with optimal performance characteristics. Discard mortars and grout if they have reached their initial set before being used.

B. Mortar-Bed Bond Coat: Mix neat cement and water to a creamy consistency.

C. Portland Cement-Lime Setting-Bed Mortar: Type M complying with ASTM C270, Proportion Specification.

D. Thinset Mortar Bond Coat: Proportion and mix according to manufacturer’s written instructions.

E. Packaged grout: Proportion and mix according to grout manufacturer’s written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces indicated to receive flagstone paving with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.

B. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.

3.2 INSTALLATION

A. Flagstone Pavers:

1. Do not use flagstone pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.
2. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of

colors and textures.

3. Exercise care in flagstone paver areas to prevent finished surfaces from becoming damaged or marred.
4. Adjust laying pattern at pavement edges such that cutting of edge pavers is minimized. Cut all pavers no smaller than one-third of the whole paver.
5. Cut flagstone pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
6. Provide space between paver units of ½" to 1".
7. Remove any cracked or structurally damaged pavers and replace with new units prior to installing grout material.

B. Edge Restraints: Before placing flagstone pavers, provide edge restraints along the perimeter of flagstone pavers as indicated on the plans.

1. Install plastic edge restraints to comply with manufacturer's written instructions. Install stakes at intervals required to hold edge restraints in place during and after flagstone paver installation.
2. Install job-built concrete edge restraints to comply with requirements in the Job Special Provisions and City of Branson Technical Specifications.

3.3 MORTAR SETTING-BED APPLICATIONS

A. Saturate concrete subbase with clean water several hours before placing setting bed. Remove surface water about one hour before placing setting bed.

B. Apply mortar-bed bond coat over surface of concrete subbase about 15 minutes before placing mortar bed. Do not exceed 1/16-inch (1.6-mm) thickness for bond coat. Limit area of bond coat to avoid its drying out before placing setting bed.

C. Apply mortar bed over bond coat; spread and screed mortar bed to uniform thickness at subgrade elevations required for accurate setting of pavers to finished grades indicated.

D. Grouted Joints: Grout paver joints complying with ANSI A108.10.

E. Grout joints as soon as possible after initial set of setting bed.

1. Force grout into joints, taking care not to smear grout on adjoining surfaces.
2. Clean pavers as grouting progresses by dry brushing or rubbing with dry burlap to remove smears before tooling joints.
3. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
4. If tooling squeezes grout from joints, remove excess grout and smears by dry brushing or rubbing with dry burlap and tool joints again to produce a uniform appearance.

F. Cure grout by maintaining in a damp condition for seven days unless otherwise recommended by grout or liquid-latex manufacturer.

3.4 FIELD QUALITY CONTROL

A. Verify final elevations for conformance to the drawings after sweeping the surface clean.

1. Prevent final Flagstone Paver finished grade elevations from deviating more than ±3/8 in. (±10 mm) under a 10 ft (3 m) straightedge or indicated slope, for finished surface of paving.

B. Lippage: No greater than 1/32 in. (0.8 mm) difference in height between Flagstone Pavers and adjacent paved surfaces, including unit pavers and stabilized decomposed granite surfaces.

3.5 REPAIRING, CLEANING AND SEALING

A. Remove and replace flagstone pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

B. Cleaning: Remove excess dirt, debris, stains, grit, etc. from exposed paver surfaces; wash and scrub clean.
1. Clean Flagstone Pavers in accordance with the stone supplier's written recommendations.

3.6 PROTECTION

A. Protect completed work from damage due to subsequent construction activity on the site.

END OF SECTION 321401

# SECTION 321813 – SYNTHETIC TURF PROTECTIVE SURFACING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Synthetic turf surfacing.

B. Related Requirements:
   1. City of Branson Technical Specifications and Job Special Provisions for preparation, compacting, and grading of granular base.

### 1.2 DEFINITIONS

A. Critical Height: Standard measure of shock attenuation according to ASTM F 2223; same as "critical fall height" in ASTM F 1292.

### 1.3 REFERENCE SPECIFICATIONS AND STANDARDS

A. ASTM F 1292-04 “Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment”.

B. ASTM D2859 “Flammability Standard”.

C. ASTM F1951-99: “Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.”

### 1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct a conference at project site.

### 1.5 SYSTEM DESIGN

A. The synthetic grass surfacing system shall be specifically designed and recommended by the manufacturer for installation as a play surface.

B. The synthetic grass surfacing system shall be constructed to maximize dimensional stability, to resist damage during normal use, and to minimize UV degradation, including fading.

C. The synthetic turf surfacing system shall be resistant to staining, weather, insects, rot, mildew, and fungus growth, and shall be non-allergenic and non-toxic.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Materials Certificates: Signed by manufacturer, certifying the materials and system proposed for the project comply with the specified performance criteria.

C. Shop Drawings: For synthetic turf surfacing.
   1. Include plans, sections, and details.
   2. Show locations of seams and method of seaming.

D. Samples: For each type of synthetic turf surfacing indicated.
   1. Turf Fabric: 18 inches (300 mm) square.
   2. Infill Material: 4 oz. (100 g) of each type.
   3. Seam Sample: 24 inches (600 mm) square with seam centered in sample.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified synthetic turf surfacing Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience in installing synthetic turf surfacing on slopes less than and equal to 1:2 (1 foot vertical to 2 foot horizontal). Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

B. Product certificates: For each synthetic turf surfacing assembly.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance data: For synthetic turf surfacing, including maintenance cleaning instructions, to include in maintenance manuals.

1.9 PROJECT CONDITIONS

A. Environmental Limitations:
   1. Do not install synthetic turf surfacing materials when:
      a. Substrate surfaces/materials are wet, excessively damp, or have standing wate.r
      b. Rain is imminent or forecast within 48 hours following proposed time of installation.
      c. Weather conditions, or forecasted conditions, in the opinion of the installer or manufacturer’s representative, will have an adverse effect on the installation.
      d. Humidity levels are outside of the limits recommended by adhesive manufacturer.
   2. Install synthetic turf surfacing materials only when:

a. Material surface temperatures, including aggregate base materials, are above 45 degrees F, and anticipated to remain above 45 degrees F for not less than 48 hours following installation.
b. Ambient air temperature is 50 degrees F and rising, but not more than 95 degrees F, and forecast to remain above 50 degrees F for not less than 48 hours following installation.
    1) Ambient air temperatures shall be taken in the shade, away from artificial heat sources such as exposed pavement and stone aggregate fill.

## 1.10 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained, certified and approved by they synthetic turf surfacing manufacturer who has successfully installed work similar in design and has completed not less than 10 projects of similar scope in the last three years and whose work has resulted in construction with a record of successful in-service performance.
    1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
    2. Personnel Certifications: Installer's field supervisor shall have certification in synthetic turf surfacing installation.

## 1.11 DELIVERY AND STORAGE OF MATERIALS

A. Deliver materials to the site in original, unopened containers, wrapping, or packaging, with manufacturer’s labels intact, identifying project, material, and production run or lot number for fabric roll.

B. Immediately following delivery, inspect materials and components for damaged or defective items, including materials that are not uniform in color, out of tolerance regarding edge alignment and minimum pile height. Materials that are found to be damaged or defective shall be replaced at no additional cost to the Owner.

C. Store materials in location and manner to allow installation of synthetic turf surfacing without excess disturbance of granular base. Store materials in a secure, dry, well-ventilated location where protected from weather, exposure to UV, soil, dust, moisture, and other contaminants. Store fabric rolls horizontally, on flat service.

D. Handle according to manufacturer’s recommendations to prevent damage, deterioration, distortion, or soiling.

## 1.12 WARRANTY

A. Special Warranty: Manufacturer and Installer agree to repair or replace components of protective surfacing that fail in materials or workmanship within manufacturer specified warranty period.
    1. Failures include, but are not limited to, the following:
        a. Deterioration and excessive wear.
        b. Excessive Fading.

c. Deterioration from UV light.
d. Tuft bind loss.
e. Fabric delamination.
f. Loss of backing integrity.
g. Excessive loss of shock attenuation.
h. Seam separation.
i. Perimeter attachments.
j. Distortion, either vertically or horizontally, due to dimensional instability.

B. Warranty Period: Limited Lifetime warranty from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. Turf Fabric: Turf fabric tested according to the following methods, with additional test method conditions for each method according to ASTM F1551.
1. Tuft Bind: Not less than 8 lbf according to ASTM D1335.
2. Breaking Strength: Minimum 200 lbf in warp direction and minimum 200 lbf perpendicular to warp direction, according to ASTM D5034.
3. Flame Resistance: Pass, ASTM D2859.

B. Synthetic Turf Playing Surfaces: Assembly tested in accordance with the following methods, with additional test method conditions for each method in accordance with ASTM F1551, and ADA Compliance ASTM F1951.
1. Impact Attenuation: Critical fall height tested according to ASTM F 1292.
2. Accessibility Standard: Minimum surfacing performance according to ASTM F 1951.

C. Permeability: Greater than 700 inches per hour of rainfall capacity according to ASTM D-1551.

D. Exterior Fire Test Exposure: Class A for application indicated in accordance with ASTM D2859. Identify products with appropriate markings to applicable testing agency.

### 2.2 SYNTHETIC TURF SURFACING

A. Synthetic Grass Surfacing: Complete surfacing system, consisting of synthetic yarns bound to water-permeable backing and infill indicated, suitable for playgrounds.
1. Basis of Design: Synthetic Grass Surfacing shall be SYNAugustine X47 as manufactured by SYNLawn with EnviroLoc plant-based backing, deluster and UV protection, Class A Fire Rating, and limited lifetime warranty.
2. Additional products/manufacturers shall be considered by Substitution Request during the bid process.

B. Turf Fabric: Woven turf fabric with multicolored fiber and UV resistance, complying with the following:
1. Yarn Fiber: Monofilament polyethylene.
2. Pile Weight: 100 oz/sq. yd. according to ASTM D5848.
3. Pile Height: 1-5/8” according to ASTM D5823.

C. Backing: Manufacturer's EnviroLoc Backing System with 2-part woven polypropylene primary backing to lock in tufted grass fibers. The backing fabric and stitched grass fibers receive a thick layer of the biobased Enviroloc coating; provide perforations or drainage channels sufficient to meet permeability indicated.

D. Infill: Manufacturer's standard sand infill.

E. Seaming method: Adhesive glue.

2.3 MATERIALS & ACCESSORIES

A. Sand Infill: EnviroFill as manufactured by US Greentech. Uniformly sized and highly rounded quartz core sand free of silts, clays, and contaminants, according to ASTM F1632; as recommended by synthetic turf surfacing manufacturer. Infill shall include antimicrobial protection to prevent the growth of bacteria, mold, and mildew

B. Seam Adhesive Glue: Two-part, thixotropic, polyurethane based turf adhesive, recommended or approved by synthetic turf surfacing manufacturer, and suitable for ambient conditions at time of installation.

C. Seaming Cloth: Seaming cloth, recommended by the synthetic turf surfacing manufacturer.

D. Impact-Attenuation Pad: Manufacturer's standard impact-attenuation pad with permeability sufficient to meet synthetic grass surfacing assembly permeability indicated.

E. Gravel Base: As recommended by the synthetic turf surfacing manufacturer.

F. Perimeter Nailer Board: Wood and plastic composite materials made from reclaimed wood fibers and reclaimed or recycled thermoplastic polymer plastic material as recommended by the synthetic turf surfacing manufacturer.

G. Provide all additional materials, equipment, and accessories necessary for acomplete installation as recommended by the manufacturer. Included are all perimeter fasteners, backings, tools, labor, equipment, and means for protection of adjacent surfaces and materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine base and other conditions, with Installer present, for compliance with requirements for installation tolerances, permeability, and other conditions affecting performance of the work.

B. Clean the area to receive the synthetic turf system of foreign material and all other substances and materials that may be detrimental to permeability and/or installation of the synthetic grass system.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF SYNTHETIC TURF

A. Base Requirements: The base shall be concrete or angular stone, leveled and compacted at a depth of 4".

B. Impact-Attenuation Pad Installation: Roll out pad and allow to relax a minimum of six hours prior to final fit and trim. Stagger head seams between adjacent rows. Fit seams snugly without stretching or forcing.

C. Roll out turf fabric and allow to relax at least four hours prior to seaming.

D. Provide seams flat and snug, with no gaps or fraying. Remove yarns that are trapped within seams. Attach turf fabric to perimeter restraint system as recommended by the manufacturer.

E. Seams in the synthetic turf fabric rolls shall be glued together with seaming cloth, utilizing the manufacturer's standard seaming procedures and materials, ensuring that each roll is properly attached to the next.
   1. Seams shall be tight, flat, and permanent, with no separation or fraying.
   2. Seams, when completed, shall display no visible signs of jointing, with fibers brushed to provide full coverage of fibers over the seam

F. Preparation: The perimeter of the area shall be defined with a composite nailer board, unless an acceptable surface for anchoring the turf currently exists. These nailer boards will be secured into concrete.

G. Repair loose seams and bubbles formed due to expansion of turf fabric prior to installation of infill.

H. Evenly broadcast and groom infill by machine in proportions and depth after settling as recommended by the manufacturer, and to meet indicated performance requirements. Rake fibers trapped by infill to surface.

3.3 CLEANING AND PROTECTION

A. The installer shall keep the site clean and clear of debris throughout the project. Waste materials, including excess materials remaining after completion of the Work, shall be removed and legally disposed of offsite.

B. Installer shall provide all labor, supplies, and equipment required to completely remove stains and other blemishes from all finished surfaces.

C. Provide protection over installed synthetic turf surfacing systems, including closing the area to traffic, as required to ensure installed system will be free of damage at time of Substantial Completion.

3.4 INSPECTION

A. After installation is complete, the synthetic turf surfacing system installer, synthetic turf surfacing system manufacturer's representative, and Owner's Representative shall inspect the

installation. Any corrections shall be noted in a written report and completed prior to Substantial Completion

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:
   1. Permeability: 774.69 in./h (mm/h) of rainfall capacity according to ASTM D-1551.
   2. Impact Attenuation: In accordance with ASTM F1292.

C. Synthetic turf protective surfacing will be considered defective if it does not pass tests.

D. Prepare test reports.

3.6 DEMONSTRATION

A. Train Owner's maintenance personnel in proper maintenance procedures for synthetic turf surfacing.

END OF SECTION 321813

# SECTION 323300 - SITE FURNISHINGS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Benches.
2. Lounge Chairs.
3. Tables.
4. Bicycle racks.
5. Weathered Steel Planter Walls.

B. Related Requirements:

1. JSP-30 “Portland Cement Concrete for Pavements and Storms” and City of Branson Technical Specifications for installing anchor bolts in concrete pavement and footings.

### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

C. Shop Drawings: Submit manufacturer’s shop drawings, including plans and elevations, indicating overall dimensions. Submittals shall be approved by Owner’s Representative prior to purchase and installation.

D. Warranty: Manufacturer’s standard warranty.

E. Product Schedule: For site furnishings. Use same designations indicated on drawings.

### 1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For site furnishings.

### 1.4 CLOSEOUT SUBMITTALS

A. Maintenance data: For site furnishings to include in maintenance manuals.

### 1.5 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Manufacturer regularly engaged in manufacture of site furnishings for 10 years.

B. Product support: Products are supported with complete engineering drawings and design patents.

C. Facility Operator: Welders and machine operators are certified.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation

C. Handling: Protect materials and finish during handling and installation to prevent damage.

PART 2 - PRODUCTS

2.1 BENCH

A. Model: Camber Bench (SBCAM-72BA) with center armrest.

B. Manufacturer: Forms + Surfaces.

C. Frame: Cast aluminum.

D. Seat and Back Material: Aluminum extrusion.

E. Finish and Color: Powdercoat, Dark Corten Texture, as indicated on drawings.

F. Installation Method: Surface mounted, as indicated on drawings.

2.2 LOUNGE CHAIR

A. Model: 720 Chair (MCH-0720-00008) with foot glides.

B. Manufacturer: Maglin Corporation.

C. Frame: Steel.

D. Seat and Back Material: Metal.

E. Material Finish and Color: Powdercoat, Saffron Yellow, as indicated on drawings.

F. Installation Method: Freestanding, as indicated on drawings.

2.3 TABLE

A. Model: Stripes 3610 Large

B. Manufacturer: Vestre

C. Frame: Steel.

D. Table Top Material: Kebony wood.

E. Finish and Color: Powdercoated, Nut Brown (RAL-8011), as indicated on drawings.

F. Installation Method: Freestanding, as indicated on drawings.

2.4 BICYCLE RACKS

A. Model: Trio Bike Rack (SKTRO).

B. Manufacturer: Forms + Surfaces

C. Frame: Cast aluminum.

D. Material Finish and Color: Powdercoat, Dark Corten Texture, as indicated on drawings.

E. Installation Method: Surface mounted with embedded anchors, as indicated on drawings.

2.5 WEATHERED STEEL PLANTER WALL – TYPE A

A. Model: Stapel Raised Planter Edge with integrated lighting and Velox Rapid Edge System (or approved equal).

B. Manufacturer: Logic Manufactured Bespoke (or approved equal).

C. Material Finish: Weathering Steel Grade A.

D. Lighting: Integrated lighting. Flexible neon light in aluminum channel as indicated on drawings.

E. Planter Shape and Form: As indicated on drawings.

F. Height: As indicated on drawings.

G. Width: As indicated on drawings.

H. Installation Method: Velox Rapid Edge System, as indicated on drawings.
   1. Modular, self-weighted steel edging system designed to form raised planters without the need for concrete foundations or mechanical fixings.
   2. This system utilizes the natural weight of the soil as ballast. This provides stability for the steel edge.

I. Shop Drawings: Manufacturer shall provide elevations and layout in plan, showing individual elements and anchor locations, as well as a tabulated list of product codes, quantities, and specific finishing details as needed. Layout shall include critical sizes and dimensions for installation and integration with other work.

2.6 WEATHERED STEEL PLANTER WALL – TYPE B

A. Model: Kitsap Modular Wall, Anchored (or approved equal).

B. Manufacturer: Tournesol Site Works (or approved equal).

C. Material Finish: Weathering Steel Grade A.

D. Lighting: Include custom accessory pockets as indicated on drawings for recessed wall lighting. Submit samples of specified fixture and housing to wall manufacturer and coordinate size and location of recessed wall lights on shop drawings.

E. Planter Shape and Form: As indicated on drawings.

F. Height: As indicated on drawings.

G. Width: As indicated on drawings.

H. Installation Method: Anchored to reinforced concrete footing as indicated on drawings. Must be structurally attached to footing through holes in the base of the wall. Quantity of wall anchors varies per wall height and length.

I. Shop Drawings: Manufacturer shall provide elevations and layout in plan, showing individual elements and anchor locations, as well as a tabulated list of product codes, quantities, and specific finishing details as needed. Layout shall include critical sizes and dimensions for installation and integration with other work.

2.7 INTEGRATED BENCH

A. Model: Plano Bench without backrest (or approved equal).

B. Manufacturer: Logic Manufactured Bespoke (or approved equal).

C. Seat Material: Iroko wood.

D. Installation Method: Per manufacturer’s installation instructions.

2.8 PORCH SWINGS

A. Bench Seat: Austin Swing Bench
   1. Seat Material: Kebony wood slats.
   2. Manufacturer: Landscape Forms Inc.
   3. Seat Frame: Powdercoated, Onyx color.

B. Double Bay U-Frame Structure
   1. Manufacturer: Landscape Forms Inc.
   2. Material Finish: As indicated on drawings.
   3. Shop Drawings: Manufacturer to provide elevations and layout in plan, showing individual elements, anchor locations, and specific finishing details as needed. Layout shall include critical sizes and dimensions for installation and integration with other work.

C. Installation Method: Manufacturer provided shop drawings does not include attachment or footing design. Contractor shall provide attachment and concrete footing design by a licensed structural engineer.

## 2.9 FABRICATION

A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended, so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.

C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

E. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

## 2.10 GENERAL FINISH REQUIREMENTS

A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

B. Unless otherwise indicated, install site furnishings after paving has been completed.

C. Install site furnishings level, plumb, true, and positioned at locations indicated on Drawings.

3.3 ADJUSTING

A. Finish Damage: Repair minor damages to finish in accordance with manufacturer’s instructions and as approved by Owner’s Representative.

B. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Owner’s Representative.

3.4 CLEANING

A. Clean furnishings promptly after installation in accordance with manufacturer’s instructions.

B. Do not use harsh cleaning materials or methods that could damage finish.

3.5 PROTECTION

A. Protect installed site furnishings to ensure that, except for normal weathering, furnishings will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 323300

# SECTION 329113 – SOIL PREPARATION

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes:
   1. Planting soils specified by composition of the mixes.

B. Related Requirements:
   1. Section 323300 “Site Furnishings” for placing planting soil in exterior unit planters.
   2. City of Branson Technical Specifications and Job Special Provisions for topsoil stripping and stockpiling.
   3. City of Branson Technical Specifications, Section 8200 “Seeding and Sodding,” for turf (lawn) materials.
   4. Section 329300 "Plants" for placing planting soil for plantings.

### 1.2 DEFINITIONS

A. AAPFCO: Association of American Plant Food Control Officials.

B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.

C. CEC: Cation exchange capacity.

D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

E. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.

F. Imported Soil: Soil that is transported to Project site for use.

G. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.

H. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.

I. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.

J. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."

K. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

L. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.

M. SSSA: Soil Science Society of America.

N. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

O. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

P. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

Q. USCC: U.S. Composting Council.

## 1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at project site.

## 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include recommendations for application and use.
   2. Include test data substantiating that products comply with requirements.
   3. Include sieve analyses for aggregate materials.
   4. Material Certificates: For each type of imported soil and soil amendment and fertilizer before delivery to the site, according to the following:
      a. Manufacturer's qualified testing agency's certified analysis of standard products.
      b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
      c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

B. Samples: For each bulk-supplied material, 1-gal. volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For each testing agency.

B. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed; and state recommendations for soil treatments and amendments to comply with requirements of this specification.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Contractor shall engage a qualified testing agency to perform preconstruction soil analyses on existing, on-site soil and imported soil.

B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
   1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.8 SOIL-SAMPLING REQUIREMENTS

A. General: Extract soil samples according to requirements in this article.

B. Sample Collection and Labeling: Have samples taken and labeled by Contractor in presence of Owner’s Representative under the direction of the testing agency. Contractor shall notify Owner’s Representative prior to taking samples.
   1. Number and Location of Samples: Minimum of six representative soil samples from varied locations for each soil to be used or amended for landscaping purposes.
   2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Sampling Soils."
   3. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.
   4. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.9 TESTING REQUIREMENTS

A. General: Perform tests on soil samples according to requirements in this article.

B. Physical Testing:
   1. Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
      a. Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
      b. Hydrometer Method: Report percentages of sand, silt, and clay.
   2. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
   3. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
   4. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D 698 (Standard Proctor).

C. Chemical Testing:
   1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
   2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."
   3. Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.

D. Fertility Testing: Soil-fertility analysis according to American Society for Testing and Materials (ASTM) testing protocols including the following:
   1. Percentage of organic matter.
   2. CEC, calcium percent of CEC, and magnesium percent of CEC.
   3. Soil reaction (acidity/alkalinity pH value).
   4. Buffered acidity or alkalinity.
   5. Nitrogen ppm.
   6. Phosphorous ppm.
   7. Potassium ppm.
   8. Manganese ppm.
   9. Manganese-availability ppm.
   10. Zinc ppm.
   11. Zinc availability ppm.
   12. Copper ppm.
   13. Sodium ppm and sodium absorption ratio.
   14. Soluble-salts ppm.
   15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.

16. Other deleterious materials, including their characteristics and content of each.

E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."

F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1,000 sq. ft. (100 sq. m) for 6-inch (150-mm) depth of soil.
2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1,000 sq. ft. (100 sq. m) for 6-inch (150-mm) depth of soil.

## 1.10 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Do not move or handle materials when they are wet or frozen.
4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

# PART 2 - PRODUCTS

## 2.1 MATERIALS

A. Regional Materials: Imported soil and soil amendments and fertilizers shall be manufactured within 500 miles (800 km) of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.

## 2.2 PLANTING SOILS SPECIFIED BY COMPOSITION

A. General: Soil amendments, fertilizers, and rates of application specified in this article are guidelines that may need revision based on testing laboratory's recommendations after preconstruction soil analyses are performed.

B. Planting-Soil Type: Existing, on-site surface soil, with the duff layer, if any, retained and stockpiled on-site. Perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.

C. Planting-Soil Type: Imported, naturally formed soil from off-site sources and consisting of silty clay loam according to USDA textures; and modified to produce viable planting soil. Amend imported soil with materials specified in other articles of this Section to become planting soil complying with the following requirements:
   1. Sources: Take imported, unamended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep, not from agricultural land, bogs, or marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or obnoxious weeds and invasive plants including, but not limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass.
   2. Imported soils shall not include the following:
      a. Soils defined regionally by the Natural Resources Conservation Service web soil survey as prime farmland, unique farmland, or farmland of statewide or local importance.
      b. Soils from greenfield sites.
      c. Sphagnum peat moss.
   3. Additional Properties of Imported Soil before Amending: Minimum of 4 percent organic matter content, friable, and with sufficient structure to give good tilth and aeration. Clean soil to be of the following:
      a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
      b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 5 percent by dry weight of the imported soil.
      c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 1 inch in any dimension.
   4. Particle Size Distribution by Separates:
      a. Total Sand: 25 to 55 percent by dry weight.
      b. Silt: 15 to 55 percent by dry weight.
      c. Clay: 5 to 30 percent by dry weight.
   5. Percentage of Organic Matter: Minimum 4 percent by volume.
   6. Soil Reaction: pH of 6 to 7.2.
   7. RCRA Metals: Below maximum limits established by the EPA.
   8. Phytotoxicity: Below phytotoxicity limits established by SSSA.

## 2.3 RAISED PLANTER SOIL

A. Planter soil shall be a mix of loam soil, compost, and sand. Planter soil shall be Garden Soil Blend as manufactured by Missouri Organic.

2.4 NON-ORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
   1. Class: T, with a minimum of 99 percent passing through a No. 8 (2.36-mm) sieve and a minimum of 75 percent passing through a No. 60 (0.25-mm) sieve.
   2. Class: O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through a No. 60 (0.25-mm) sieve.
   3. Form: Provide lime in form of ground dolomitic limestone.

B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through a No. 40 (0.425-mm) sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 (0.30-mm) sieve.

E. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C 33/C 33M.

2.5 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
   1. Feedstock: Limited to leaves.
   2. Reaction: pH of 5.5 to 8.
   3. Soluble-Salt Concentration: Less than 4 dS/m.
   4. Moisture Content: 35 to 55 percent by weight.
   5. Organic-Matter Content: 50 to 60 > percent of dry weight.
   6. Particle Size: Minimum of 98 percent passing through a 1/2-inch (13-mm) sieve.

PART 3 - EXECUTION

3.1 GENERAL

A. Place planting soil and fertilizers according to requirements in other Specification Sections.

B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.

C. Proceed with placement only after unsatisfactory conditions have been corrected.

## 3.2 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

A. General: Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Subgrade Preparation: Till subgrade to a minimum depth of 6 inches for turf areas and a minimum depth of 12 inches for planting beds. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

C. Spread unamended soil to total depth of 6 inches (150mm) but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
   1. Amendments: Apply soil amendments, except compost, and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
      a. Mix fertilizer with planting soil no more than seven days before planting.

D. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

## 3.3 APPLYING COMPOST TO SURFACE OF PLANTING SOIL

A. Application: Apply 2 inches of compost to surface of in-place planting soil for planting beds and turf areas. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

## 3.4 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:
   1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D 698. Space tests at no less than one for each 1,000 sq. ft. of in-place soil or part thereof.
   2. Performance Testing: For each amended planting-soil type, demonstrating compliance with specified performance requirements. Perform testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.

C. Soil will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

## 3.5 PROTECTION

A. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking vehicles or equipment.
   3. Vehicle traffic.
   4. Foot traffic.
   5. Erection of sheds or structures.
   6. Impoundment of water.
   7. Excavation or other digging unless otherwise indicated.

B. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Owner’s Representative and replace contaminated planting soil with new planting soil.

## 3.6 CLEANING

A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.

END OF SECTION 329113

# SECTION 329300 - PLANTS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
1. Plant materials.
2. Fertilizers.
3. Mulches.
4. Herbicides and pesticides.
5. Tree stabilization materials.
6. Landscape edgings.

B. Related Sections:
1. Section 328400 “Landscape Irrigation” for complete irrigation systems.
2. Section 329113 “Soil Preparation”.
3. City of Branson Technical Specifications, Section 8200 “Seeding and Sodding,” for turf (lawn) materials.

### 1.2 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required.

D. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

E. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintain a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

F. Finish Grade: Elevation of finished surface of planting soil.

G. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

H. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.

I. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

J. Planting Area: Areas to be planted.

K. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 “Soil Preparation” for drawing designations for planting soils.

L. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

M. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

N. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

O. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

P. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.

Q. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

## 1.3 SUBMITTALS

A. Product Data: For each type of product indicated, including soils.
   1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
   2. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to the Project.
   3. Plant Photographs: Include color photographs in digital format of each required species and size of plant material as it will be furnished to the Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

B. Samples for Verification: For each of the following:
   1. Organic Mulch: 1 gallon volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
   2. Mineral Mulch: 2-lb sample of each mineral mulch required in sealed plastic bags labeled with source of mulch. Each sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and makeup.
   3. Edging Materials and Accessories: Manufacturer’s standard size, to verify color selected.

C. Qualification Data: For qualified landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

D. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
   1. Manufacturer's certified analysis of standard products.
   2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

E. Material Test Reports: For existing in-place surface soil and imported or manufactured topsoil. Refer to Specification Section 329113 “Soil Preparation”.

F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods.

G. Warranty: Sample special warranty.

## 1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants.
   1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
   2. Experience: Five years' experience in landscape installation.
   3. Installer's Field Supervision: Maintain an experienced full-time supervisor on Project site when work is in progress.
   4. Personnel Certifications: Installer’s field supervisor shall have certification in all of the following categories from the Professional Landcare Network:
      a. Certified Landscape Technician - Exterior, with installation and maintenance specialty area(s), designated CLT-Exterior.
      b. Certified Ornamental Landscape Professional, designated COLP.
   5. Pesticide applicator: State licensed, commercial.

B. Soil-Testing Laboratory Qualifications: Refer to specification Section 329113 “Soil Preparation”.

C. Soil Analysis: Refer to specification Section 329113 “Soil Preparation”.

D. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

E. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.
   1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches (150 mm) above the root flare for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above the root flare for larger sizes.
   2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

F. Plant Material Observation: Owner's Representative may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Owner's Representative retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
   1. Notify Owner's Representative of sources of planting materials seven days in advance of delivery to site.

G. Preinstallation Conference: Conduct conference at Project site.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk materials with appropriate certificates.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

D. Store bulbs in a dry place at 60 to 65 deg F until planting.

E. Handle planting stock by root ball.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

G. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation

H. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:
1. Notify Owner’s Representative no fewer than two days in advance of proposed interruption of each service or utility.
2. Do not proceed with interruption of services or utilities without Owner’s Representative's written permission.

C. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
1. Trees and Shrubs: Spring Planting – March 15 to May 31.
2. Trees and Shrubs: Fall Planting - September 15 to December 15.
3. Grasses and Perennials: Spring Planting – April 15 to May 31.
4. Grasses and Perennials: Fall Planting - September 15 to October 15.
5. Bulbs: Fall Planting - September 15 to November 30.

D. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

E. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.7 PLANT SUBSTITUTIONS FOR PLANTS NOT AVAILABLE

A. Submit all requests for substitutions of plant species, or size to the Owner's Representative, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in the search for the required plant and a record of other attempts to locate the required material. Requests shall also include sources of plants found that may be of a smaller or larger size, or a different shape or habit than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution

1.8 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
      b. Structural failures including plantings falling or blowing over.
      c. Faulty performance of tree stabilization and landscape edgings.
      d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Periods from Date of Substantial Completion:
      a. Trees and Shrubs: 12 months.
      b. Ground Covers, Perennials, Ornamental Grasses and Other Plants: 12 months.
   3. Include the following remedial actions as a minimum:
      a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
      b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
      c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
      d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

1.9 MAINTENANCE SERVICE

A. Initial maintenance services for trees, shrubs, perennials, grasses, and other plants:
   1. Provide maintenance by skilled employees of landscape installer. Maintain as required in Section 3, 'Plant Maintenance' article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period described below.
   2. Maintenance Period: One (1) year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
   1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch (19 mm) in diameter; or with stem girdling roots will be rejected.
   2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Owner's Representative, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.

E. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

F. Shrubs, Perennials & Ornamental Grasses: Provide healthy disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery.

2.2 FERTILIZERS

A. Planting Tablets: Tightly compressed chip type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.
   1. Size: 7-gram tablets.
   2. Nutrient Composition: 12 percent nitrogen, 8 percent phosphorous, and 8 percent potassium, by weight plus micronutrients.
   3. Manufacturer: 12-8-8 Gro-Power Planting Tablets

## 2.3 MULCHES

A. Organic Mulch for planting beds and trees in turf areas. Colorants shall be environmentally safe and non-toxic for children, pets, and plants. Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
   1. Type: Premium Brown Colored Double Ground Hardwood.
   2. Size Range: 3 inches (76 mm) maximum.
   3. Color: Brown

## 2.4 PESTICIDES AND HERBICIDES

A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended in writing by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

## 2.5 TREE STABILIZATION MATERIALS

A. Stakes and Guys:
   1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal (38-by-38-mm actual) by length indicated, pointed at one end.
   2. Tie options:
      a. Tree-Tie Straps: UV-resistant polypropylene or nylon webbing with brass grommets.
   3. Flags: Standard surveyor's plastic flagging tape, white, 6 inches (150 mm) long.

## 2.6 LANDSCAPE EDGINGS

A. Aluminum Edging: Standard-profile extruded-aluminum landscape edging for straight-line and curvilinear applications, ASTM B221 (ASTM B221M), Alloy 6063-T6, fabricated in standard lengths with interlocking sections with loops stamped from face of sections to receive stakes.
   1. As manufactured by:
      a. Permaloc Corporation, Cleanline edging;
      b. Sure-loc, Sure-Edge edging;
      c. Or approved equal.
   2. Edging Size: 3/16 inch (4.8 mm) thick by 5-1/2 inches (140mm) deep.
   3. Connection Method: Section ends shall splice together with an interlocking stakeless snap-down design.
   4. Stakes: 12-inch (305mm) aluminum stakes. Stakes to interlock into section loops.

5. Finish: Bronze Duraflex. Paint finish shall comply with AAMA 2603 for electrostatically baked on paint.
6. Warranty: 15-year limited material warranty for landscape edging from manufacturing defects in workmanship or material.

2.7 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

B. Burlap: Non-synthetic, biodegradable.

C. Mycorrhizal Fungi: Dry, granular inoculant containing at least 6,810 spores per lb (0.45 kg) of vesicular-arbuscular mycorrhizal fungi and 60 million spores per lb (0.45 kg) of ectomycorrhizal fungi, and a maximum particle size of 2mm. Apply per manufacturer’s recommendations. Mychorrhizal inoculant to be Myke Pro Landscape as manufactured by Premier Tech Biotechnologies.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
   3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain required results.
   4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Owner's Representative and replace with new planting soil.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Owner's Representative's acceptance of layout before excavating or planting. Make minor adjustments as required.

D. Layout plants at locations directed by Owner's Representative. Stake locations of individual trees and shrubs and outline areas for multiple plantings

## 3.3 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."

B. Placing Planting Soil: Place and mix planting soil in-place over exposed subgrade.

C. Before planting, obtain Owner Representative's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

D. Application of Mycorrhizal Fungi: Broadcast dry product uniformly over prepared soil at application rate according to manufacturer's written recommendations.

## 3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
   1. Excavate approximately three times as wide as ball diameter for balled and burlapped stock.
   2. Excavate at least 12 inches (300mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
   3. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
   4. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
   5. Maintain required angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
   6. Maintain supervision of excavations during working hours.
   7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.

C. Obstructions: Notify the Owner's Representative if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
   1. Hardpan Layer: Drill 6-inch (150mm) diameter holes, 24 inches (600 mm) apart, into free-draining strata or to a depth of 10 feet (3 m), whichever is less, and backfill with free-draining material.

D. Drainage: Notify Owner's Representative if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

## 3.5 TREE AND SHRUB PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set balled and burlapped stock plumb and in center of planting pit or trench with root flare 1 inch (25 mm) above adjacent finish grades.
   1. Use planting soil for backfill.
   2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
   3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
   4. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch (25 mm) from root tips; do not place tablets in bottom of the hole.
      a. Quantity: Per manufacturer recommendations.
   5. Place mycorrhizal fungi around root ball per manufacturer’s recommendations.
   6. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Set container-grown or fabric bag-grown stock plumb and in center of planting pit or trench with root flare 1 inch (25 mm) above adjacent finish grades.
   1. Use planting soil for backfill.
   2. Carefully remove root ball from container or fabric bag without damaging root ball or plant.
   3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

4. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch (25 mm) from root tips; do not place tablets in bottom of the hole.
   a. Quantity: Per manufacturer recommendations.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

## 3.6 TREE AND SHRUB PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees and shrubs according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Owner's Representative, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

C. Do not apply pruning paint to wounds.

## 3.7 TREE STABILIZATION

A. Install trunk stabilization as follows unless otherwise indicated:
1. Upright Staking and Tying: Stake trees of 1 1/2- through 5-inch (50- through 125-mm) caliper. Stake trees of less than 1 1/2-inch (50-mm) caliper only as required to prevent wind tip out. Use a minimum of three stakes of length required to penetrate at least 18 inches (450 mm) below bottom of backfilled excavation and to extend one-third of trunk height above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.
2. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

## 3.8 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees and shrubs as indicated on Drawings in even rows with triangular spacing.

B. Distribute bulbs in drifts at depths indicated on Drawings prior to backfill of planting soil.

C. Use planting soil for backfill.

D. Dig holes large enough to allow spreading of roots.

E. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.

F. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

G. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

H. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

## 3.9 PLANTING AREA MULCHING

A. Mulch backfilled surfaces of planting areas and other areas indicated.
   1. Trees in Turf Areas: Apply organic mulch ring of 3-inch average thickness, with 18-inch radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.
   2. Organic Mulch in Planting Beds: Apply 3-inch (75-mm) average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems. Do not cover the crowns of container plantings with mulch.

## 3.10 EDGING INSTALLATION

A. Install aluminum edging as indicated on Drawings and per manufacturer’s recommendations.

## 3.11 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

B. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

## 3.12 PESTICIDE AND HERBICIDE APPLICATION

A. Apply herbicides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written recommendations. Do not apply to seeded areas.

C. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

## 3.13 REPAIR AND REPLACEMENT

A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Owner's Representative.
   1. Submit details of proposed pruning and repairs.
   2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
   3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Owner's Representative.

B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Owner's Representative determines are incapable of restoring to normal growth pattern.
   1. Provide new trees of same size as those being replaced for each tree of 4 inches or smaller in caliper size.
   2. Species of replacement trees: Same species being replaced.

## 3.14 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

END OF SECTION 329300

# SECTION 32 84 00 - LANDSCAPE IRRIGATION

## PART 1 - GENERAL

### 1.01 SCOPE

A. Furnish all labor, materials, supplies, equipment, tools and transportation, and perform all operations in connection with and reasonably incidental to the complete installation of the irrigation system, and guarantee/warranty as shown on the drawings, the installation details, and as specified herein.

### 1.02 ITEMS OF WORK INCLUDED

A. Items of work specifically included are:

1. Procurement of all applicable licenses, permits, and fees including payment of all development, plant investment, or any other fees and permits associated with the purchase and installation of the tap.
2. Coordination of Utility Location. (“Call Before You Dig”)
3. Excavation, installation and backfill of backflow.
4. Verification of existing static pressure and flow rate.
5. Installation, connection of all sensors, and programming of irrigation controller.
6. Installation and connection to irrigation central control system.
7. Provision and connection of electrical power supply to the irrigation control system.
8. Maintenance period.
9. Sleeving for irrigation pipe and wire.

### 1.03 ITEMS OF WORK NOT INCLUDED

A. Items of work specifically excluded are:

1. Excavation, installation and backfill of tap into municipal water line.
2. Excavation, installation and backfill of water meter and vault.

### 1.04 RELATED WORK

A. Division 00 00 00 – Procurement and Contracting Requirements

1. 00 01 15 – List of Drawing Sheets

B. Division 01 00 00 – General Requirements

1. 01 10 00 – Summary
2. 01 11 00 – Summary of Work
3. 01 33 23 – Shop Drawings, Product Data, and Samples

C. Division 02 00 00 – Existing Conditions

D. Division 32 82 00 – Irrigation Pumps

E. Division 32 90 00 – Planting

### 1.05 SUBMITTALS

A. Submit samples under provisions of Contract Documents

B. Deliver four (4) copies of all required submittals to the Owners' Representative within fifteen (15) days from the date of the Notice to Proceed.

C. Materials List: Include, pipe, fittings, mainline components, water emission components, control system components and all other components needed to construct a fully operating automatic irrigation system. At a minimum include all components specifically identified on the irrigation drawings. Quantities of materials need not be included.

D. Manufacturers' Data: Submit manufacturers' catalog cuts, specifications, and operating instructions for equipment shown on the materials list. Highlight specific items to be utilized for construction of the irrigation system.

E. Shop Drawings: Submit shop drawings called for in the installation details. Show products required for proper installation, their relative locations, and critical dimensions. Note modifications to the installation detail.

F. Project Record Drawings: Submit project record (As-Built) drawings to Owner prior to commencement of maintenance period per Contract Documents. Accurate and complete project record drawings will be required before the maintenance period begins.

## 1.06 RULES AND REGULATIONS

A. Work and materials shall be in accordance with the latest edition of the National Electric Code, the Uniform Plumbing Code as published by the Western Plumbing Officials Association, and applicable laws and regulations of the governing authorities.

B. When the contract documents call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, provide the quality and size required by the contract documents.

C. If quantities are provided either in these specifications or on the drawings, these quantities are provided ***for information only***. It is the Contractor's responsibility to determine the actual quantities of all material, equipment, and supplies required by the project and to complete an independent estimate of quantities and wastage.

## 1.07 TESTING

A. Notify the Owners' Representative three (3) days in advance of any testing.

B. Pressure Test:

1. Pipelines jointed with rubber gaskets or threaded connections may be subjected to a pressure test at any time after partial completion of backfill. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure a minimum of 24 hours before testing. Pipelines installed with thrust blocks shall have the concrete cured for a minimum of seven (7) days before testing.

2. Subsections of mainline pipe may be tested independently, subject to the review of the Owners' Representative.

3. Furnish clean, clear water, pumps, labor, fittings, and all equipment necessary to conduct tests or retests.

4. The test pressure shall not exceed the rated working pressure of the pipe.

   a. Hydrostatic Pressure Test:

      1) Fill mainline pipe with water, purge all air out of the system. Subject mainline pipe to a hydrostatic pressure of 150 PSI for two hours. Test with mainline components installed. A 2 PSI pressure variation is allowed.

a.) The use of an air compressor to provide pressure is not allowed.

2) Fill lateral pipe with water, purge all air out of the system. Subject lateral pipe to a hydrostatic pressure of 75 PSI. Test with risers for sprinklers capped.

a.) The use of an air compressor to provide pressure is not allowed.

3) Backfill to prevent pipe from moving under pressure. Expose couplings and fittings.

4) Leakage will be detected by visual inspection. Replace defective pipe, fitting, joint, valve, or appurtenance. Repeat the test until the pipe passes test.

a.) Cement or caulking to seal leaks is prohibited.

5) The Owners' Representative reserves the option to furnish the gauges and metering devices for the tests.

C. Operational Test:

1. Prior to the Operational Test connect and configure all system sensors.

a. The flow sensor shall be operational and operated per the manufacturer’s instructions to learn the flow for all zones to be tested. The flow shall be stored in the controller’s memory.

b. The master valve shall be installed and connected to the controller, and fully operational.

c. All rain, wind, temperature, weather or other sensors specified on the plan shall be installed, connected, and fully operational.

2. Activate each remote-control valve in sequence from controller. The Owners’ Representative will visually observe operation, water application patterns, and leakage.

3. Replace defective remote-control valve, solenoid, wiring, or appurtenance to correct operational deficiencies.

4. Replace, adjust, or move water emission devices to correct operation or coverage deficiencies.

5. Replace defective pipe, fitting, joint, valve, sprinkler, or appurtenance to correct leakage problems.

6. Cement or caulking to seal leaks is prohibited.

7. Repeat test(s) until each lateral passes all tests.

8. The Owners' Representative will measure and record static and dynamic pressure at the point of connection and in the system mainline at various locations.

9. The Owner's Representative will measure and record dynamic pressure at various sprinklers and water emission devices.

D. Central Control System Acceptance Test:

1. Upon completion of the centralized control system installation and Final Review, a System Acceptance Test must be passed.

2. Following Final Review, an evaluation period will commence. Upon completion of 30 days of continuous service without major system problems, the system will be accepted, and the guarantee/warranty period will begin. If at any time during the 30-day evaluation period, a major system problem occurs, the source of the problem will be determined, corrected and the 30-day evaluation period will start again. Equipment will not be accepted until such time as the System Acceptance Test is passed.

a. All central control system features, monitoring, reports, alerts, data collection, communication to all controllers and remote access shall be functional during the evaluation period.

3. If successful completion of the System Acceptance Test is not attained within 90 days following Final Review, the Engineer/Landscape Architect/Owners' Representative {this is project specific to only 1 entity} has the option to request replacement of equipment, terminate the order, or portions thereof, or continue with the System Acceptance Test. These options will remain in effect until such time as a successful completion of the System Acceptance Test.

4. Final payment will be made after successful completion of the final System Acceptance Test.

E. Central Control Communication:

1. Wired Communication:

a. Wired communication between the central control system, satellite controller and sensors shall be operational for thirty (30) days without? operational interruptions. Communication components shall meet or exceed central control and controller system manufacturers specifications.

2. Wireless Communication:

a. Wireless communication between the central control system, satellite controller and sensors shall be operational for thirty (30) days without? operational interruptions. Communication components shall meet or exceed central control and controller system manufacturers specifications.

## 1.08 CONSTRUCTION REVIEW

A. The purpose of on-site reviews by the Owners' Representative is to periodically observe the work in progress and the Contractor's interpretation of the construction documents and to address questions with regards to the installation.

1. Scheduled reviews such as those for irrigation system layout or testing should be scheduled with the Owners' Representative as required by these specifications.

2. Impromptu reviews may occur at any time during the project.

3. Final review will occur at the completion of the irrigation system and Record Drawing (As-Built) submittal.

## 1.09 GUARANTEE/WARRANTY AND REPLACEMENT

A. The purpose of this guarantee/warranty is to ensure that the Owner receives irrigation materials of prime quality, installed and maintained in a thorough and careful manner.

1. For a period of one year from commencement of the formal maintenance period, guarantee/warranty irrigation materials, equipment, and workmanship against defects. Fill and repair depressions. Restore landscape or structural features damaged by the settlement of irrigation trenches or excavations. Repair damage to the premises caused by a defective item. Make repairs within seven (7) days of notification from the Owners' Representative.

2. Costs for all guarantee/warranty work shall be entirely paid for by the Contractor.

3. Contract documents govern replacements identically as with new work. Make replacements at no additional cost to the contract price.

4. Guarantee/warranty applies to originally installed materials and equipment and replacements made during the guarantee/warranty period.

## PART 2 - MATERIALS

### 2.01 QUALITY

A. Use materials that are new and without flaws or defects of any type and are the best of their class and kind.

### 2.02 SUBSTITUTIONS

A. Pipe sizes referenced in the Construction Documents are minimum sizes and may be increased at the option of the Contractor. Substitutions in pressure class of pipe shall be approved by the Irrigation Designer.

### 2.03 IRRIGATION TAP AND WATER METER

A. Provide materials required by local codes for installation of the municipal water tap and associated piping.

B. Provide materials required by local code for installation of the water meter, vault and associated piping.

### 2.04 SLEEVING

A. Install separate sleeve beneath paved areas to route each run of irrigation pipe or wiring bundle.

B. Sleeving material beneath pedestrian pavements shall be Class 200 bell end pipe with solvent welded joints.

C. Sleeving beneath drives and streets shall be Class 200 PVC bell end pipe with solvent welded joints.

D. Sleeving diameter: As indicated on the drawings and installation details or equal to twice the nominal diameter of the pipe or wiring bundle being sleeved.

1. Furnish and install size sleeves for wiring bundles per the current NEC Conduit Fill calculations and charts.

### 2.05 PIPE AND FITTINGS

A. Mainline Pipe and Fittings:

1. Use rigid, unplasticized polyvinyl chloride (PVC) round pipe, National Sanitation Foundation (NSF) approved, extruded from material meeting the requirements of Cell Classification 12454 as defined in ASTM Standard D1784, with an integral belled end.

2. Use Class 200, SDR-21, rated at 200 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241 and ASTM Standard D2672. Use PVC pipe rated at higher pressures than Class 200 in the case of small nominal diameters which are not manufactured in Class 200.

a. Use rubber-gasketed pipe for mainline pipe with a nominal diameter greater than or equal to 3-inches and rubber-gasketed ductile iron fittings with water-based lubricant approved by the pipe manufacturer. All gasket seals shall meet the requirements of ASTM Standard D3139 and the gasket material shall meet and/or exceed the requirements of ASTM Standard F477 for elastomeric seals.

1) Use gasketed pipe and fittings equipped with Rieber Gasket System.

b. Use solvent weld pipe for mainline pipe with a nominal diameter less than 3-inches or where a pipe connection occurs in a sleeve. Use Schedule 40/80, Type 1, Cell Classification 12454, PVC solvent weld fittings conforming to ASTM Standard D1784 and ASTM Standard D2466 (Schedule 40)/D2467 (Schedule 80). All belled end pipe

shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672. Use primer specifically approved by the pipe manufacturer. Solvent cement to conform to ASTM Standard D2564.

c. Use Class 315, SDR-13.5, rated at 315 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241 and ASTM Standard D2672. Use PVC pipe rated at higher pressures than Class 315 in the case of small nominal diameters which are not manufactured in Class 315. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672.

d. Use Schedule 40/80/120 conforming to the dimensions and tolerances established by ASTM Standard D1785. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672.

1. General Conditions

a. Pipe sizes referenced on the construction drawings are minimum sizes and may be increased at the option of the Contractor at no additional cost to the Owner.

b. All mainline piping shall have a metallic detectable warning tape, manufactured by Christy's, model number TA.DT.3.BW, placed six-inches from the final finish grade. The tape shall be three-inches wide, blue in color, and indicated "Buried Water Below". The tape shall be brought into and looped in all valve boxes, just below the surface, at the ends for ease of locating or terminated in valve boxes.

3. Contractor shall run a #14-AWG, direct bury, UL listed wire by Paige Wire along the entire mainline length. Wire shall be continuous with wire splices only placed within valve boxes and labeled on the record drawing. No wires are to be exposed. Use purple jacketed wire for mainline runs. Tape the tracer wire to the pipe at 15-foot intervals. Label tracer wire runs in each valve box.

B. Lateral Pipe and Fittings:

1. Use rigid, unplasticized polyvinyl chloride (PVC) round pipe, National Sanitation Foundation (NSF) approved, extruded from material meeting the requirements of Cell Classification 12454 as defined in ASTM Standard D1784, with an integral belled end.

2. Use Class 200, SDR-21, rated at 200 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 200 in the case of small nominal diameters that are not manufactured in Class 200. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672.

a. Use Class 160, SDR-26, rated at 160 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 160 in the case of small nominal diameters which are not manufactured in Class 160. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672.

b. Use Class 250, SDR-17, rated at 250 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 250 in the case of small nominal diameters which are not manufactured in Class

250. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672.

c. Use Class 315, SDR-13.5, rated at 315 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 315 in the case of small nominal diameters which are not manufactured in Class 315. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672.

d. Use Schedule 40/80/120 conforming to the dimensions and tolerances established by ASTM Standard D1785. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672. All belled end pipe shall have tapered sockets to create an interference type fit, which meet or exceed the dimensional requirements and minimum socket length for pressure type sockets as defined by ASTM Standard 2672.

1) Use Schedule 40/80, Type 1, Cell Classification 12454, PVC solvent weld fittings conforming to ASTM Standard D1784 and ASTM Standard D2466 (Schedule 40)/D2467 (Schedule 80).

e. Use primer approved by the pipe manufacturer. Solvent cement to conform to ASTM Standard D2564, of a type approved by the pipe manufacturer.

1) Solvent welded pipe shall not be installed when the outside temperature drops below forty-five (45) degrees Fahrenheit.

f. For drip emitter irrigation laterals downstream of remote control valves, use UV radiation resistant polyethylene pipe manufactured from Dow Chemical FINGERPRINT DFDA-7510NT polyethylene resin manufactured by Dow Chemical or a Dow Chemical Licensee with a minimum of 2% carbon black or approved UV stabilizer, and minimum nominal pipe ID dimension of 0.810" for 3/4-inch pipe.

1) Use Type 1, cell classification 12454PVC as defined in ASTM Standard D1784 insert fittings conforming to ASTM Standard D2609 designed for use with flexible polyethylene (PE) pipe.

C. Specialized Pipe and Fittings:

1. Copper pipe: Use Type K drawn temper (hard or rigid) copper pipe conforming to ASTM Standard B88.

a. Use wrought copper or cast bronze fittings that are dezincification resistant and conform to ASTM Standard B75, soldered or threaded per the installation details. Use a 95% tine and 5% antimony solder. Use a thread sealant approved by the pipe manufacturer.

2. Galvanized steel pipe: Use Schedule 40/80 conforming to ASTM Standard A123.

a. Use galvanized, threaded, Class 150, malleable iron fittings conforming to ASME Standard B16.3 and ASTM Standard A123.

3. Assemblies calling for pre-fabricated swing joints shall utilize SPEARS swing joints or approved equal. Swing joints shall be rated at 315 psi, and use O-ring, Buttress thread and street elbow construction.

4. Inline Emitter Drip Tubing:

a. Provide a low volume dripper line with integral and evenly spaced pressure compensating drippers at specified intervals in a discharge rate of 0.6 gallons per hour (GPH). Inline Emitter Drip Tubing shall consist of nominal sized one-half inch low-

density linear polyethylene tubing. The Inline Emitter Drip Tubing shall have internal pressure compensating, continuous self-cleaning, integral drippers at a specified spacing of 12" on center with a built-in check valve capable of holding up to 4.6/8.5 feet of water, or blank tubing without drippers where specified in detail.

1) Inside diameter: 0.57 inches
2) Outside diameter: 0.67 inches
3) Color: Brown/Black/Purple/Chartreuse

b. Use spiral barb fittings supplied by the same manufacturer as the inline emitter drip tubing. Use tubing stakes supplied by the same manufacturer as the inline emitter drip tubing.

c. All tubing shown outside of the bed area shall be Class 200 PVC pipe.

5. Low Density Polyethylene Hose:

a. Use pipe specifically intended for use as a flexible swing joint.

1) Inside diameter: 0.490+0.010 inch
2) Wall thickness: 0.100+0.010 inch
3) Color: Black
4) Pressure Rating: 80 PSI

b. Use spiral barb fittings supplied by the same manufacturer as the hose.

6. Assemblies calling for threaded pipe connections shall utilize PVC Schedule 80 nipples and PVC Schedule 80 threaded fittings.

7. Joint sealant:

a. Use only Teflon-type tape pipe joint sealant on plastic threads. Use nonhardening, nontoxic pipe joint sealant formulated for use on water-carrying pipes on metal threaded connections.

8. Marking Tape:

a. Mainline Pipe - Christy underground I.D. tape TA.DT.6.P.NPW.

## 2.06 MAINLINE COMPONENTS

A. Main System Shutoff Valve: As per local practice and in compliance with local code.

B. Winterization Assembly: As per local practice and in compliance with local code.

C. Backflow Prevention Assembly: As presented in the installation details and in compliance with local code.

D. Master Valve Assembly: As presented in the installation details.

E. Flow Sensor Assembly: As presented in the installation details.

F. Isolation Gate Valve Assembly: As presented in the installation details. Install a separate valve box over a 3-inch depth of 3/4-inch gravel for each assembly.

G. Quick Coupling Valve Assembly: Double swing joint arrangement as presented in the installation details. Install at a height where key can be inserted, turned and valve pressurized without removing threaded handle.

H. Combination Pressure Regulator/Wye-Strainer Assembly: As presented in the installation details. Install a separate valve box over a 3-inch depth of 3/4-inch gravel for each assembly.

I. Pressure Regulator Assembly: As presented in the installation details. Install a separate valve box over a 3-inch depth of 3/4-inch gravel for each assembly.

J. Wye-Strainer Assembly: As presented in the installation details. Install a separate valve box over a 3-inch depth of 3/4-inch gravel for each assembly.

K. Manual Drain Valve Assembly: As presented in the installation details. Install a separate sump consisting of a minimum of nine cubic feet of 3/4-inch gravel for each drain valve.

L. Air/Vacuum Relief Valve Assembly: As presented in the installation details.

## 2.07 SPRINKLER AND BUBBLER IRRIGATION COMPONENTS

A. Remote Control Valve (RCV) Assembly for Sprinkler and Bubbler Laterals:

1. As presented in the installation details. Use wire connectors and waterproofing sealant to join control wires to solenoid valves. Use standard identifications tags marked with controller name and station number. Install a separate valve box over a 3-inch depth of washed pea gravel for each assembly. Use 8-ounce minimum weight non-woven geotextile fabric underneath pea gravel and box assembly to prevent dirt and debris intrusion. Adjust valve flow control per manufacturer's recommendations prior to use.

    a. Install decoder compatible with irrigation controller on each valve for communication on 2-wire control system.

2. Sprinkler Assembly: As presented in the drawings and installation details.

3. Bubbler Assembly: As presented in the drawings and installation details.

## 2.08 DRIP IRRIGATION COMPONENTS

A. Remote Control Valve (RCV) Assembly for Drip Laterals:

1. As presented in the installation details. Use wire connectors and waterproofing sealant to join control wires to solenoid valves. Use standard identifications tags marked with controller name and station number. Install a separate valve box over a 3-inch depth of washed pea gravel for each assembly. Use 8-ounce minimum weight non-woven geotextile fabric underneath pea gravel and box assembly to prevent dirt and debris intrusion. Adjust valve flow control per manufacturer's recommendations prior to use.

    a. Install a decoder, compatible with irrigation controller, on each valve for communication on 2-wire control system.

B. Zone Control Valve Assembly:

1. As presented in the installation details. Install a separate box over a 3-inch depth of pea gravel for each assembly. Use 8-ounce minimum weight non-woven geotextile fabric underneath pea gravel and box assembly to prevent dirt and debris intrusion.

C. Flush Cap Assembly

1. As presented in the installation details. Locate at the end of each drip irrigation lateral pipe. Install a separate valve box over a 3-inch depth of pea gravel for each assembly. Use 8-ounce minimum weight non-woven geotextile fabric underneath pea gravel and box assembly to prevent dirt and debris intrusion.

D. Drip Operation Indicator

1. As presented in the installation details. Install at the most remote dead ends of UV radiation resistant polyethylene tubing. Install in area easily accessible for maintenance and visibility. Minimum of 8-inch indicator pop up height.

## 2.09 CONTROL SYSTEMS COMPONENTS

A. Irrigation Controller

1. Central Internet Based Control Package

B. Controller – Rain Bird ESPLXIVMP Plastic controller. 240 volt controller (per City of Branson request)

1. The controller is to utilize a two-wire communication path and valve decoders for operation of remote control valves and sensors.
2. The controller is to have cellular communication board for connection to a cloud based central control system.
3. The controller shall be mounted as directed on the irrigation plans.
4. Controller is to be installed and grounded per manufacturer recommendations.
5. Power to the controllers will be provided by the electrician to the controller location. The contractor will be responsible for making the connection from the power drop to the controller.
6. The controller will be mounted as directed by the Owner. Provide and install a Paige lightning surge arrestor 250090LED on the power to the controller.
7. Product manufacture and local distributor are to provide base training for the operation of the controllers at no cost to the owner. The distributor is to have complete knowledge of the operation and programming background of the control system.

C. Instrumentation:

1. As presented in the drawings and installation details.
2. Rain Sensor: WR2 as manufactured by Rain Bird.
3. Flow Sensor: UFS100 manufactured by Rain Bird with IVM Sensor Decoder.
4. (AWG) No.12/14 solid copper conforming to ASTM B-3 or ASTM B-8. Type UF or PE cable, UL approved for direct underground burial from the controller unit to each remote-control valve. Use American Wire Gauge (AWG) No.12 wire for common wire.
    a. Two-Wire Cable:
        1) Use Two-wire cable shall be 14-AWG, 2-conductor, Maxi cable, as manufactured by Paige Wire.
        2) Cable shall have two, conductors conforming to ASTM B-33. Inner conductors are to be listed as Type UF/TWU by UL or ETL or CSA.
        3) Insulation shall be polyvinyl chloride, black and red.
        4) Cable assembly shall have the insulated conductors laid parallel within the jacket.
        5) Outer jacket shall be pressure extruded high density PE conforming to ICEA S-61-402 and NEMA WC5 Jacket Thickness of 3/64-inch minimum jacket material to completely fill interstices between the two insulated conductors.
        6) Provide five-feet of extra wire at each valve so that the decoder can be easily removed from the valve box and serviced.
        7) Refer to drawings for wire jacket colors. Wire color shall be continuous over its entire length.
        8) Use Decoder Cable Fusing Device for water-proof quick-disconnect isolation of 2-wire cable path for troubleshooting of damaged wire path sections.
    b. Decoder Cable Fusing Device (DCFD \ Test Switch)

1) Install inline, two-way, and three-way fusing devices as indicated on the drawings. Devices shall be manufactured by Paige Wire, model number 270DCFD or approved equal.

2) Each DCFD shall have a wire marking tag, Paige Wire model number 270WMT, installed at each location to indicate where each leg of the device leads to and original system volts and amps for each leg of the system to allow for easier future maintenance.

3) Connect the DCFD leads as per the installation instructions and this specification.

4) Refer to Paige Wire installation instructions for additional information.

5)

D. Splices: Use wire connectors with waterproof sealant. Wire connector to be of UV radiation resist plastic construction consisting of two pieces, one piece which snap locks into the other. Connector shall be pre-filled with non-hardening silicone gel. Utilize twist style wire connector provided with assembly to connect wires.

1. Wire connectors to meet requirements of UL Standard 486D
2. Utilize DBR/Y-600 Black Splices
3. Encase wiring not located near PVC irrigation pipe in PVC Schedule 80 electrical conduit. Utilize long sweep elbows for changes of direction.

E. Warning tape: Detectable Warning Tape reading “Caution: Buried Electrical Line Below” shall be inert plastic film highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils. Tape shall be six inches wide, colored red.

F. Grounding

1. All controllers and decoders are to be grounded as indicated on the drawings. Minimum grounding per details and per the ASIC detail for controller grounding.
2. Grounding shall be a rod and plate arrangement for the controller.
3. Grounding Rod
    a. 5/8-inch diameter, UL listed, copper-clad ground rod, 8-feet in length, with a 10-AWG factory welded insulated conductor, 15-feet in length.
    b. Manufacturer shall be Paige Wire, model number 182000IC10 or approved equal.
    c. Clamps, wire nuts, and / or CADWELD “One-Shot” connectors are not approved for use.
    d. Install rod per manufacturers guidelines as to not damage the rod or welded conductor.
    e. Ground rods shall be placed in their own ten-inch round valve box.
4. Grounding Plate
    a. 4-inch by 36-inch copper ground plate with a 10-AWG welded insulated conductor, 10-feet in length.
    b. Manufacturer shall be Paige Wire, model number 182201IC or approved equal.
    c. Provide 50-pounds of ground enhancement material (GEM) / earth contact backfill on the top and the bottom of each plate, for a total of 100-pounds per plate.
    d. Manufacture shall be Loresco, Paige Electric model number 1820058 or 1820059 based on site soil conditions or approved equal.
5. All wire connections between the ground rod and ground plate leads to the surge

suppression device shall be made via a Paige Wire re-enterable terminal connector, model number 270RC3 or approved equal.

6. The Contractor will be responsible to provide earth ground of two-wire ohm reading of not more than ten-ohms or approved in writing from the manufacture or within manufacture's acceptable range.
7. The supplying distributor shall check all ohm readings with a ground resistance tester (commonly referred to as a "Megger") and provide documentation, signed by the distributor, that all readings are under ten-ohms. The Contractor will be responsible for making adjustments to the grounding system to achieve this reading at no additional cost to the Owner.

## 2.10 OTHER COMPONENTS

A. Tools and Spare Parts: Provide operating keys, servicing tools, test equipment, other items and spare parts indicated in the General Notes of the drawings.

1. Additionally, provide the following:
2. Two operating keys for each type and size of manually operated valve.
3. Two keys for each type and size of quick coupler.
4. Two of each servicing wrench or tool needed for complete access, adjustment, installation of nozzles and repair of all spray, rotary and rotor type sprinklers.
5. Two 3" diameter pressure gauges and associated fittings to measure system pressure and pressure at spray, rotary and rotor type sprinklers and remote-control valves. Pressure gauge shall have a range of 0-160 PSI.
6. Two sets of keys for each controller, enclosure or equipment that requires keyed access.
    a. If required, keys shall be keyed to match other locks that the Owner possess.
7. All instruction manuals, repair manuals, operating manuals and original paper work related to the products that were installed during construction of the irrigation system.

B. Owner Stock: Include the following for owner stock for future replacements.

1. Five (5) of each type of spray and rotary sprinkler body.
2. Five (5) of each type of rotor body.
3. Ten (10) of each type, radius, arc, and nozzle of spray and rotary sprinkler.
4. Ten (10) of each type and size of rotor nozzle.
5. Three (3) of each type of drip operation indicator.
6. Ten (10) of each type of drip emitter.
7. Five (5) of each type of valve decoder.
8. One (1) of each type of sensor decoder.
9. Five (5) of each type of surge protector/arrestor.
10. 100-feet continuous length of inline emitter drip tubing of each flow rate and inline emitter spacing.
11. Ten (10) sets of waterproof connectors.
12. Five (5) of each type and size of fitting; inline emitter, point source drip, sprinkler, sprinkler lateral and mainline.

# PART 3 - EXECUTION

## 3.01 INSPECTION AND REVIEWS

A. Site Inspections:

1. Verify site conditions and note irregularities affecting work of this section. Report irregularities to the Owners' Representative prior to beginning work.
2. Beginning work of this section implies acceptance of all existing conditions.
3. Contractor will be held responsible for coordination between landscape and irrigation system installation.
4. Landscape material locations shown on the Landscape Plan shall take precedence over the irrigation system equipment locations. If irrigation equipment is installed in conflict with the landscape material locations shown on the Landscape Plan, the Contractor will be required to relocate the irrigation equipment, as necessary, at Contractor's expense.

B. Utility Location (Call Before You Dig)

1. Arrange for and coordinate with local authorities the location of all underground utilities.
2. Repair any underground utilities damaged during construction. Make repairs at no additional cost to the contract price.

C. Irrigation System Layout Review: Irrigation system layout review will occur after the staking has been completed. Notify the Owners' Representative three business days in advance of review. Modifications will be identified by the Owners' Representative at this review.

## 3.02 LAYOUT OF WORK

A. Stake out the irrigation system. Adjust system layout from plans to conform to final approved landscape design. Items staked shall include: Sprinklers, pipe, control valves, manual drains, controller, and isolation valves, grounding locations and sleeving.

B. Install all mainline pipe and mainline components inside of project property lines.

## 3.03 EXCAVATION, TRENCHING AND BACKFILLING

A. Excavate to permit the pipes to be laid at the intended elevations and to permit work space for installing connections and fittings.

B. Minimum cover (distance from top of pipe or control wire to finish grade):

1. 24-inch over mainline pipe and over electrical conduit.
2. 18-inch over control wire.
3. 18-inch over signal wire.
4. 12-inch over lateral pipe to sprinklers.
5. 8-inch over drip lateral pipe in turf or paved areas downstream of drip system zone control valves.
6. 3-inch minimum mulch cover over drip lateral pipe in planting beds downstream of drip system zone control valves. PVC UV radiation resistant lateral pipe shall be installed directly on the soil surface under landscape fabric.

C. Backfill only after lines have been reviewed and passed hydrostatic tests and accepted by the Owner.

1. Excavated material is generally satisfactory for backfill. Backfill shall be free from rubbish, vegetable matter, frozen materials, and stones larger than 1/2-inch in maximum dimension. Remove material not suitable for backfill. Backfill placed next to pipe shall be free of sharp objects which may damage the pipe. All soil shall be screened and pass through a square opening 1/2" x 1/2.

2. Backfill un-sleeved pipe and sleeves in either of the following manners:
    a. Backfill and puddle the lower half of the trench. Allow to dry 24 hours. Backfill the remainder of the trench in 6-inch layers. Compact to density of surrounding soil.
    b. Backfill the trench by depositing the backfill material equally on both sides of the pipe in 6-inch layers and compacting to the density of surrounding soil.
3. Enclose pipe and wiring beneath roadways, walks, curbs, etc. in sleeves. Minimum compaction of backfill for sleeves shall be 95% Standard Proctor Density, ASTM D698-78. Conduct one compaction test for each sleeved crossing less than 50 feet long. Conduct two compaction tests for each sleeved crossing greater than 50 feet long. Costs for such testing and any necessary retesting shall be paid for by the Contractor. Use of water for compaction around sleeves, puddling, will not be permitted.
4. Dress backfilled areas to original grade
5. Where utilities conflict with irrigation trenching and pipe work, contact the Owners' Representative for trench depth adjustments.

**3.04 SLEEVING AND BORING**

A. Install sleeving at a depth which permits the encased pipe or wiring to remain at the specified burial depth.

B. Extend sleeve ends six inches beyond the edge of the paved surface. Cover pipe ends and mark with stakes. Mark concrete with a chiseled "X" at sleeve end locations.

C. Bore for sleeves under obstructions which cannot be removed. Employ equipment and methods designed for horizontal boring.

**3.05 ASSEMBLING PIPE AND FITTINGS**

A. General:
    1. Keep pipe free from dirt and pipe scale. Cut pipe ends square and deburr. Clean pipe ends.
    2. Keep ends of assembled pipe capped to prevent dirt and debris intrusion. Remove caps only when necessary to continue assembly.

B. Mainline Pipe and Fittings:
    1. Use only strap-type friction wrenches for threaded plastic pipe. Tighten threaded plastic pipe per pipe and fitting manufacturers recommendations.
    2. PVC Solvent Weld Pipe:
        a. Use primer and solvent cement. Join pipe in a manner recommended by the manufacturer and in accordance with accepted industry practices.
        b. Cure for 30 minutes before handling and 24 hours before allowing water in pipe.
        c. Snake pipe from side to side within the trench.
    3. Fittings: The use of cross and wye type fittings is not permitted.

C. Lateral Pipe and Fittings:
    1. Use only strap-type friction wrenches for threaded plastic pipe. Tighten threaded plastic pipe per pipe and fitting manufacturers recommendations.
    2. PVC Solvent Weld Pipe:
        a. Use primer and solvent cement. Join pipe in the manner recommended by the manufacturer and in accordance with accepted industry practices.
        b. Cure for 30 minutes before handling and 24 hours before allowing water in the pipe.

c. Snake pipe from side to side within the trench.

3. Polyethylene (PE) Pipe:

a. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.

b. Snake pipe from side to side within the trench.

4. UV Radiation Resistant Polyethylene Pipe:

a. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.

b. Snake pipe from side to side within the trench, on the soil surface, and hold in place with tubing stakes spaced every five feet.

5. Fittings: The use of cross and wye type fittings is not permitted.

D. Specialized Pipe and Fittings:

1. Copper Pipe:

a. Buff surfaces to be joined to a bright finish. Coat with solder flux.

b. Solder so that a continuous bead shows around the joint circumference.

2. Galvanized Steel Pipe:

a. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.

b. Use factory-made threads whenever possible. Field-cut threads will be permitted only where necessary. Cut threads on axis using clean, sharp dies.

c. Apply Teflon-type tape or pipe joint compound to the male threads only.

3. Pre-fabricated double swing joints: Install per manufacturer's recommendations.

4. Low Density Polyethylene Hose: Install per manufacturer's recommendations.

5. PVC Threaded Connections:

a. Use only factory-formed threads. Field-cut threads are not permitted.

b. Use only thread sealant recommended by pipe and fitting manufacturer.

c. When connection is plastic-to-metal, the plastic component shall have male threads and the metal component shall have female threads.

6. Make metal-to-metal, threaded connections with Teflon-type tape or pipe joint compound applied to the male threads only.

## 3.06 INSTALLATION OF MAINLINE COMPONENTS

A. Main System Shut Off Valve: Install where indicated on the drawings.

B. Winterization Assembly: Install where indicated on the drawings.

C. Backflow Prevention Assembly: Install where indicated on the drawings. Install assembly so that its elevation, orientation, access, and drainage conform to the manufacturer's recommendations and applicable health codes.

D. Master Valve Assembly: Install where indicated on the drawings.

E. Flow Sensor Assembly: Install where indicated on the drawings.

F. Isolation Gate Valve Assembly:

1. Install where indicated on the drawings.
2. Locate at least 12-inches from and align with adjacent walls or edges of paved areas.

G. Quick Coupling Valve Assembly: Install where indicated on the drawings.

H. Combination Pressure Regulator/Wye-Strainer Assembly: Install where indicated on the drawings.

I. Pressure Regulator Assembly: Install where indicated on the drawings.

J. Wye Strainer Assembly: Install where indicated on the drawings.

K. Manual Drain Valve Assembly: Install where indicated on the drawings and at other low points in the mainline piping. Determine additional low points after staking mainline and approve locations with Owner.

L. Air/Vacuum Relief Valve Assembly: Install where indicated on the drawings and at other high points in the mainline piping. Determine additional high point after staking mainline and approve locations with Owner.

## 3.07 INSTALLATION OF SPRINKLER IRRIGATION COMPONENTS

A. Remote Control Valve (RCV) Assembly for Sprinkler Laterals:

1. Flush mainline before installation of RCV assembly.
2. Install where indicated on the drawings. Wire connectors and waterproof sealant shall be used to connect control wires to remote control valve wires. Install connectors and sealant per the manufacturer's recommendations.
3. Install only one RCV to a valve box. Locate valve box at least 12-inches from and align with nearby walls or edges of paved areas. Group RCV assemblies together where practical. Arrange grouped valve boxes in rectangular patterns. Allow at least 12-inches between valve boxes.
4. Adjust RCV to regulate the downstream operating pressure.
5. Attach ID tag with controller station number to control wiring.

B. Sprinkler Assembly:

1. Flush lateral pipe before installing sprinkler assembly.
2. Install per the installation details at locations shown on the drawings.
3. Locate rotary sprinklers 6-inches from adjacent walls, fences, or edges of paved areas.
4. Locate spray sprinklers 3-inches from adjacent walls, fences, or edges of paved areas.
5. Set sprinklers perpendicular to the finish grade.
6. Supply appropriate nozzle or adjust arc of coverage of each sprinkler for best performance.
7. Adjust the radius of throw of each sprinkler for best performance.

## 3.08 INSTALLATION OF DRIP IRRIGATION COMPONENTS

A. Remote Control Valve (RCV) Assembly for Drip Laterals

1. Flush mainline pipe before installing RCV assembly.
2. Locate as shown on the drawings. Wire connectors and waterproof sealant shall be used to connect control wires to remote control valve wires. Connectors and sealant shall be installed as per the manufacturer's recommendations.
3. Install only one RCV to valve box. Locate at least 12-inches from and align with nearby walls or edges of paved areas. Group RCV assemblies together where practical.

4. Arrange grouped valve boxes in rectangular patterns.

B. Drip Emitter Assembly:

1. Locate as shown on the drawings and installation details.
2. Flush lateral pipe before installing emitter assembly.
3. Cut emitter outlet distribution tubing square.
4. Install an access sleeve as part of each multiple-outlet emitter assembly for emitters located in turf areas.
5. Use tools and techniques recommended by the manufacturer. Make openings for barb-mounted emitters with the emitter manufacturer's hole-punching tool.

C. Flush Cap Assembly: Install at the end of each drip irrigation lateral pipe as shown on the installation details.

## 3.09 INSTALLATION OF CONTROL SYSTEM COMPONENTS

A. Irrigation Controller Unit:

1. The location of the controller unit as depicted on the drawings is approximate; the Owners' Representative will determine the exact site location upon commencement of contract. during sprinkler layout review.
2. Lightning protection: Ground rods are to have a minimum diameter of 3/4" and a minimum length of 10 feet. These are to be driven into the ground in a vertical position or an oblique angle not to exceed 15 degrees at location 10 feet from the electronic equipment, the ground plate, or the wires and cables connected to said equipment, as shown in the irrigation details. The rod is to be stamped with the UL logo. A 6 AWG solid bare copper wire (no more than 12 feet long) shall be connected to the ground rod by the installer using a Cadweld GR1161G" One-Shot" welding kit. This wire shall be connected to the electronic equipment ground lug as shown in the detail above.
3. Lightning protection: Provide on all remote-control valve wiring as recommended by the manufacturer. Provide other components such as ground rod, grounding wire, etc., to manufacturer's recommendations.
4. Install primary surge protection arrestors on incoming power lines.
5. Install one valve output surge protection arrestor on each control wire and one for the common wire.
6. Attach wire markers to the ends of control wires inside the controller unit housing. Label wires with the identification number (see drawings) of the remote-control valve to which the control wire is connected.
7. Connect control wires to the corresponding controller terminal.

B. Instrumentation:

1. Install sensors per the installation details and manufacturer's recommendations. Install at locations shown on the drawings.
2. Install electrical connections between irrigation controller and sensors per manufacturer's recommendations.

C. Control Wire:

1. Bundle control wires where two or more are in the same trench. Bundle with pipe wrapping tape spaced at 10-foot intervals.
2. Decoder Systems: Where 2-wire decoder cable is used, install decoder cable fuse devices

for wire-path trouble-shooting at each intersection where the cable splits in different directions, and in long cable runs between groups of multiple decoders. Install device per manufacturer's recommendations.

3. Provide a 24-inch excess length of wire in an 8-inch diameter loop at each 90-degree change of direction, at both ends of sleeves, and at 100-foot intervals along continuous runs of wiring. Make wiring loop by turning control wire 5 turns around 1-inch pipe. Coil 24-inch length of wire within each remote-control valve box.
4. Install common ground wire and one control wire for each remote-control valve. Multiple valves on a single control wire are not permitted.
5. If a control wire must be spliced, make splice with wire connectors and waterproof sealant, installed per the manufacturer's instructions. Locate splice in a valve box which contains an irrigation valve assembly, or in a separate 6-inch round valve box. Use same procedure for connection to valves as for in-line splices.
6. Unless noted on plans, install wire parallel with and under PVC mainline pipe. If wire is installed adjacent to section of metal pipe, separate wire from pipe minimum of 6-inches and install wire in PVC conduit.
7. Encase wire not installed with PVC mainline pipe in electrical conduit.

D. Warning tape: Detectable Warning Tape shall be installed approximately 6 inches above mainline pipe where required or where specified.

E. Existing Control Wire:

1. It is assumed that existing 24 VAC control wire, or two-wire path and sensor wire between existing controller and sensors, and between the controllers and solenoid valves is in workable condition. However, Contractor shall field verify the condition and operation of existing control wire or sensor wire prior to construction. Any concerns are to be brought to the attention of the Owner prior to installation of the replacement controller.
2. If existing control wire or sensor wire requires replacement Contractor shall inform Owner of the cost impact and project schedule.

## 3.10 INSTALLATION OF CENTRAL CONTROL SYSTEM COMPONENTS

A. Central Control Unit:

1. The location of the central control unit as depicted on the drawings is approximate; the Owners' Representative will determine the exact location upon commencement of contract during sprinkler layout review.
2. Install and test central control components including computer, interface components, and communication hardware per manufacturer's recommendations.
3. Communication: Coordinate installation of all communications connections local authorities having jurisdiction.
4. Lightning protection: Provide on all remote-control valve wiring as recommended by the manufacturer. Provide other components such as ground rod, grounding wire, etc., to manufacturer's recommendations.
5. Install primary surge protection arrestors on incoming power lines.
6. Install one valve output surge protection arrestor on each control wire and one for the common wire.
7. Attach wire markers to the ends of control wires inside the controller unit housing. Label wires with the identification number (see drawings) of the remote-control valve to which the control wire is connected.

8. Connect control wire to the corresponding control unit terminal.

B. Instrumentation:

1. Install sensors per the installation details and manufacturer's recommendations. Install at locations shown on the drawings.

2. Install electrical connections between central control unit components and sensors per manufacturer's recommendations.

C. Control Wire:

1. Bundle control wires where two or more are in the same trench. Bundle with pipe wrapping tape spaced at 10-foot intervals.

2. Decoder Systems: Where 2-wire decoder cable is used, install decoder cable fuse devices for wire-path trouble-shooting at each intersection where the cable splits in different directions, and in long cable runs between groups of multiple decoders. Install device per manufacturer’s recommendations.

3. Control wiring may be chiseled into the soil utilizing a vibratory plow device specifically manufactured for pipe pulling and wire installation. Appropriate chisel must be used so that wire is fed into a chute on the chisel, and wire is not subject to pulling tension. Minimum burial depth must equal minimum cover previously listed.

4. Provide a 24-inch excess length of wire in an 8-inch diameter loop at each 90-degree change of direction, at both ends of sleeves, and at 100-foot intervals along continuous runs of wiring. Do not tie wiring loop. Coil 36-inch length of wire within each remote-control valve box.

5. Install common ground wire and one control wire for each remote-control valve. Multiple valves on a single control wire are not permitted.

6. If a control wire must be spliced, make splice with wire connectors and waterproof sealant, installed per the manufacturer's instructions. Locate splice in a valve box which contains an irrigation valve assembly, or in a separate 6-inch round valve box. Use the same procedure for connection to valves as for in-line splices.

7. Unless noted on plans, install wire parallel with and under PVC mainline pipe. If wire is installed adjacent to section of metal pipe, separate wire from pipe minimum of 6-inches and install wire in PVC conduit.

8. Encase wire not installed with PVC mainline pipe in electrical conduit.

D. Warning tape: Detectable Warning Tape shall be installed approximately 6 inches above mainline pipe where required or where specified.

## 3.11 INSTALLATION OF OTHER COMPONENTS

A. Tools and Spare Parts:

1. Prior to the Pre-Maintenance Review, supply to the Owner operating keys, servicing tools, test equipment, and any other items indicated on the drawings.

2. Prior to Final Review, supply to the Owner the spare parts indicated in the General Notes on the drawings.

B. Other Materials: Install other materials or equipment shown on the drawings or installation details to be part of the irrigation system, even though such items may not have been referenced in these specifications.

## 3.12 PROJECT RECORD (AS-BUILT) DRAWINGS

A. Maintain on-site and separate from documents used for construction, one complete set of

contract documents as Project Documents. Keep documents current. Do not permanently cover work until as-built information is recorded.

B. Record pipe and wiring network alterations. Record work which is installed differently than shown on the construction drawings. Record accurate reference dimensions, measured from at least two permanent reference points, of each irrigation system valve, each backflow prevention device, each controller or control unit, each sleeve end, each stub-out for future pipe or wiring connections, and other irrigation components enclosed within a valve box.

C. Prior to Final Review, purchase from the Owners' Representative a reproducible mylar copy of the drawings. Using technical drafting pen, duplicate information contained on the project drawings maintained on site. Label each sheet "Record Drawing". Completion of the Record Drawings will be a prerequisite for the Final Review.

## 3.13 MAINTENANCE

A. Upon completion of Final Review, maintain irrigation system for a duration of 30 calendar days. Make periodic examinations and adjustments to irrigation system components to achieve the most desirable application of water.

B. Following completion of the Contractor's maintenance period, the Owner will be responsible for maintaining the system in working order during the remainder of the guarantee/warranty period, for performing necessary minor maintenance, for trimming around sprinklers, for protecting against vandalism, and for preventing damage during the landscape maintenance operation.

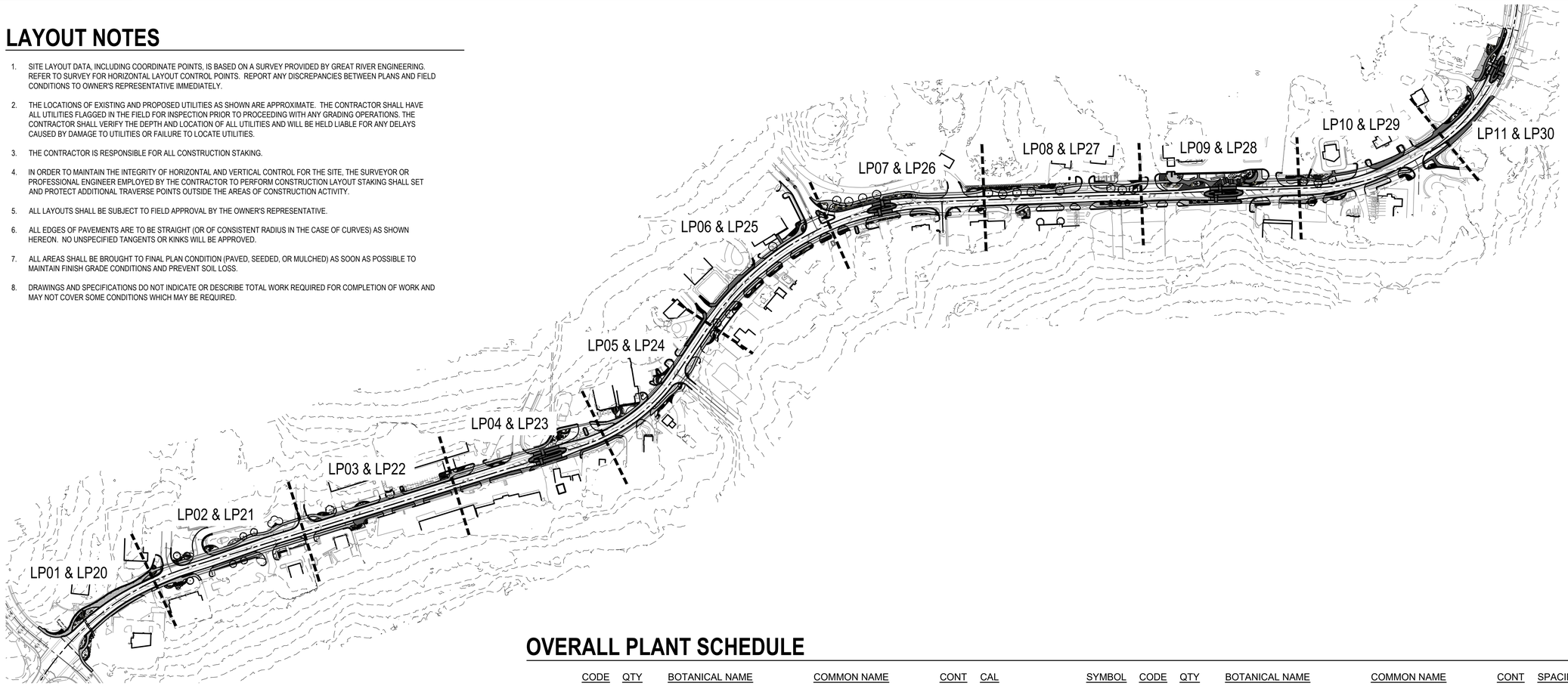
## 3.14 CLEAN-UP

A. Upon completion of work, remove from the site all machinery, tools, excess materials, and rubbish.

**END OF SECTION 32 8400**

# LAYOUT NOTES

1. SITE LAYOUT DATA, INCLUDING COORDINATE POINTS, IS BASED ON A SURVEY PROVIDED BY GREAT RIVER ENGINEERING. REFER TO SURVEY FOR HORIZONTAL LAYOUT CONTROL POINTS. REPORT ANY DISCREPANCIES BETWEEN PLANS AND FIELD CONDITIONS TO OWNER'S REPRESENTATIVE IMMEDIATELY.
2. THE LOCATIONS OF EXISTING AND PROPOSED UTILITIES AS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL HAVE ALL UTILITIES FLAGGED IN THE FIELD FOR INSPECTION PRIOR TO PROCEEDING WITH ANY GRADING OPERATIONS. THE CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF ALL UTILITIES AND WILL BE HELD LIABLE FOR ANY DELAYS CAUSED BY DAMAGE TO UTILITIES OR FAILURE TO LOCATE UTILITIES.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING.
4. IN ORDER TO MAINTAIN THE INTEGRITY OF HORIZONTAL AND VERTICAL CONTROL FOR THE SITE, THE SURVEYOR OR PROFESSIONAL ENGINEER EMPLOYED BY THE CONTRACTOR TO PERFORM CONSTRUCTION LAYOUT STAKING SHALL SET AND PROTECT ADDITIONAL TRAVERSE POINTS OUTSIDE THE AREAS OF CONSTRUCTION ACTIVITY.
5. ALL LAYOUTS SHALL BE SUBJECT TO FIELD APPROVAL BY THE OWNER'S REPRESENTATIVE.
6. ALL EDGES OF PAVEMENTS ARE TO BE STRAIGHT (OR OF CONSISTENT RADIUS IN THE CASE OF CURVES) AS SHOWN HEREON. NO UNSPECIFIED TANGENTS OR KINKS WILL BE APPROVED.
7. ALL AREAS SHALL BE BROUGHT TO FINAL PLAN CONDITION (PAVED, SEEDED, OR MULCHED) AS SOON AS POSSIBLE TO MAINTAIN FINISH GRADE CONDITIONS AND PREVENT SOIL LOSS.
8. DRAWINGS AND SPECIFICATIONS DO NOT INDICATE OR DESCRIBE TOTAL WORK REQUIRED FOR COMPLETION OF WORK AND MAY NOT COVER SOME CONDITIONS WHICH MAY BE REQUIRED.




# LANDSCAPE NOTES

1. LOCATE UTILITIES PRIOR TO COMMENCING LANDSCAPE OPERATIONS. ALL TREES SHALL BE FIELD POSITIONED AS TO AVOID CONFLICTS WITH EXISTING AND PROPOSED UTILITIES. NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICTS OR OBSTRUCTIONS.
2. CONTRACTOR SHALL STAKE ALL PLANTING AREAS IN THE FIELD PRIOR TO PLANTING FOR APPROVAL OF THE OWNER OR THEIR REPRESENTATIVE.
3. CONTRACTOR SHALL VERIFY ALL PLANT QUANTITIES PRIOR TO PLANTING. ANY DISCREPANCIES WITH THE PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE. THE PLAN QUANTITIES SHALL SUPERCEDE SCHEDULED QUANTITIES.
4. ALL PLANT MATERIAL SHALL BE SPECIMEN QUALITY AND SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI A60.1 THE 'AMERICAN STANDARD FOR NURSERY STOCK'.
5. ALL PLANTING BEDS SHALL BE EDGED WITH CONCRETE RIBBON CURB OR ALUMINUM EDGING PER THE PLANS AND DETAILS.
6. PREPARE PLANTING BEDS AND INCORPORATE AMENDMENTS ACCORDING TO SPECIFICATIONS. ALL PERENNIAL AND SHRUB PLANTING BEDS TO RECEIVE 6" TOPSOIL PER DETAILS AND SPECIFICATIONS. 'SEDGE MEADOW' PLANTING BEDS SHALL RECEIVE 12" TOPSOIL PER DETAILS AND SPECIFICATIONS. NO PLANTING WORK SHALL COMMENCE UNTIL OWNER'S REPRESENTATIVE OR OWNER HAS VERIFIED DEPTH OF TOPSOIL.
7. DOUBLE GROUND HARDWOOD MULCH, PER SPECIFICATIONS SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL PLANTING BEDS (PLANT MASSINGS) AND AROUND ALL TREES. SINGLE TREES AND SHRUBS SHALL BE MULCHED TO THE OUTSIDE EDGE OF THE SAUCER OR LANDSCAPE ISLAND.
8. ALL TREES SHALL BE STAKED AND GUYED PER DETAIL AND SPECIFICATIONS.
9. ALL PLANT MATERIAL SHALL BE INSTALLED TO ALLOW A ONE FOOT (1') CLEARANCE BETWEEN PLANT AND ADJACENT PAVEMENT. A TWO FOOT (2') CLEARANCE FOR CAR OVERHANG IS REQUIRED AT ALL PARKING ISLANDS AND PERIMETERS.
10. THE LANDSCAPE CONTRACTOR SHALL NOT COMMENCE WORK UNTIL THE SITE IS FREE OF DEBRIS CAUSED BY ON-GOING CONSTRUCTION OPERATIONS. REMOVAL OF DEBRIS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. LANDSCAPE WORK SHALL NOT BEGIN UNTIL THE OWNER'S REPRESENTATIVE AND OWNER HAVE GIVEN WRITTEN APPROVAL FOR SUCH. THERE SHALL BE NO DELAYS DUE TO LACK OF COORDINATION FOR THIS ACTIVITY.
11. THE OWNER'S REPRESENTATIVE AND OWNER SHALL APPROVE FINE GRADING AND CONDITION OF SITE PRIOR TO SODDING OPERATIONS.
12. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED FOR OTHER PLANTINGS SHALL BE SODDED WITH DROUGHT TOLERANT TURF TYPE TALL FESCUE, RE: SPECIFICATIONS.

# OVERALL PLANT SCHEDULE

| | CODE | QTY | BOTANICAL NAME | COMMON NAME | CONT | CAL |
|---|---|---|---|---|---|---|
| TREES | | | | | | |
| | AA | 7 | Acer saccharum 'Autumn Splendor' | Autumn Splendor Sugar Maple | B & B | 2.5" Cal. |
| | AX | 5 | Acer truncatum x platanoides 'Warrenred' TM | Pacific Sunset Maple | B & B | 2.5" Cal. |
| | GF | 4 | Ginkgo biloba 'Fastigiata' | Fastigiate Maidenhair Tree | B & B | 2.5" Cal. |
| | GD | 6 | Gymnocladus dioica 'Espresso' | Kentucky Coffeetree | B & B | 2.5" Cal. |
| | NC | 3 | Nyssa sylvatica 'Northern Splendor' | Northern Splendor Tupelo | B & B | 2.5" Cal. |
| | TB | 4 | Tilia americana 'Boulevard' | Boulevard American Linden | B & B | 2.5" Cal. |
| | UH | 7 | Ulmus x 'Patriot' | Patriot Elm | B & B | 2.5" Cal. |
| | | 2 | EXISTING TREE | | | |
| ORNAMENTAL TREES | | | | | | |
| | AG2 | 2 | Acer griseum | Paperbark Maple | B & B | 1.5" Cal. |
| | AG | 5 | Amelanchier x grandiflora 'Autumn Brilliance' | Autumn Brilliance Apple Serviceberry | B & B | 8` HT., MULTI-STEM |

| | CODE | QTY | BOTANICAL NAME | COMMON NAME | CONT | SPACING |
|---|---|---|---|---|---|---|
| SHRUBS | | | | | | |
| | AP | 421 | Aronia melanocarpa 'SMNAMPEM' TM | Low Scape Snowfire Black Chokeberry | #3 cont. | 3` o.c. |
| | FC | 108 | Forsythia x 'Courtasol' | Gold Tide® Forsythia | #3 cont. | 3` o.c. |
| | HL | 265 | Hydrangea paniculata 'SMHPLQF' | Little Quick Fire® Panicle Hydrangea | #3 cont. | 3` o.c. |
| | HO | 50 | Hydrangea quercifolia 'Snow Queen' | Snow Queen Oakleaf Hydrangea | #3 cont. | 6` o.c. |
| | HT | 160 | Hypericum kalmianum 'SMHKBF' | Blues Festival St. Johnswort | #3 cont. | 3` o.c. |
| | JS | 16 | Juniperus x pfitzeriana 'Sea Green' | Sea Green Pfitzer Juniper | #3 cont. | 6` o.c. |
| | PT | 255 | Physocarpus opulifolius 'SMPOTW' TM | Tiny Wine Ninebark | #3 cont. | 3` o.c. |
| | RL | 19 | Rhus typhina 'Lacinata' | Cutleaf Staghorn Sumac | #5 Cont. | 12` o.c. |
| | VM | 4 | Viburnum dentatum 'Blue Muffin' | Blue Muffin Arrowwood Viburnum | #3 cont. | 6` o.c. |
| | WE | 193 | Weigela florida 'Elvera' | Midnight Wine® Weigela | #3 cont. | 2` o.c. |
| GRASSES | | | | | | |
| | BC | 379 | Bouteloua curtipendula | Side Oats Grama | #1 Cont. | 1.5` o.c. |
| | BB | 257 | Bouteloua gracilis `Blonde Ambition` | Blonde Ambition Blue Grama | #1 Cont. | 1.5` o.c. |
| | CB | 358 | Calamagrostis brachytricha | Korean Feather Reed Grass | #1 Cont. | 2` o.c. |
| | CP3 | 81 | Carex pensylvanica | Pennsylvania Sedge | #1 Cont. | 18" o.c. |
| | JE3 | 94 | Juncus effusus | Soft Rush | #1 Cont. | 2` o.c. |
| | PH | 342 | Panicum virgatum 'Heavy Metal' | Heavy Metal Switch Grass | #1 Cont. | 2` o.c. |
| | PS | 320 | Panicum virgatum 'Shenandoah' | Shenandoah Switch Grass | #1 Cont. | 2` o.c. |
| | SB2 | 318 | Schizachyrium scoparium 'Blaze' | Blaze Little Bluestem | #1 Cont. | 2` o.c. |
| | SP | 286 | Schizachyrium scoparium 'Prairie Munchkin' | Prairie Munchkin Little Bluestem | #1 Cont. | 2` o.c. |
| | SA | 337 | Sesleria autumnalis | Autumn Moor Grass | #1 Cont. | 2` o.c. |
| | SH2 | 984 | Sporobolus heterolepis | Prairie Dropseed | #1 Cont. | 1.5` o.c. |
| PERENNIALS | | | | | | |
| | AI2 | 54 | Amsonia hubrichtii 'String Theory' | String Theory Bluestar | #1 Cont. | 1.5` o.c. |
| | ER2 | 162 | Echinops ritro | Globe Thistle | #1 Cont. | 1.5` o.c. |
| | IC | 153 | Iris sibirica 'Caesar's Brother' | Caesar's Brother Siberian Iris | #1 Cont. | 1.5` o.c. |
| | KU | 169 | Kniphofia uvaria | Red Hot Poker | #1 Cont. | 1.5` o.c. |

| SYMBOL | CODE | QTY | BOTANICAL NAME | COMMON NAME | CONT | SPACING |
|---|---|---|---|---|---|---|
| | | 5,536 sf | PERENNIAL MIX #1 | | | |
| | AB2 | 639 | Amsonia x 'Blue Ice' | Blue Ice Bluestar | #1 Cont. | 18" o.c. |
| | BS2 | 290 | Baptisia x 'Solar Flare' | Solar Flare Prairieblues™ False Indigo | #1 Cont. | 24" o.c. |
| | CA4 | 810 | Carex amphibola | Creek Sedge | Quart | 16" o.c. |
| | SH4 | 769 | Stachys officinalis 'Hummelo' | Hummelo Betony | #1 Cont. | 18" o.c. |
| | | 4,958 sf | PERENNIAL MIX #2 | | | |
| | AM2 | 727 | Allium x 'Millenium' | Millenium Ornamental Onion | #1 Cont. | 16" o.c. |
| | CI2 | 576 | Callirhoe involucrata | Purple Poppymallow | #1 Cont. | 18" o.c. |
| | CD | 727 | Carex divulsa | European Grey Sedge | Quart | 16" o.c. |
| | RS3 | 576 | Rudbeckia hirta 'Indian Summer' | Indian Summer Black-eyed Susan | #1 Cont. | 18" o.c. |
| | | 4,160 sf | PERENNIAL MIX #3 | | | |
| | AI | 576 | Amsonia hubrichtii 'String Theory' | String Theory Bluestar | #1 Cont. | 18" o.c, |
| | CM3 | 384 | Calamintha nepeta 'Montrose White' | Montrose White Lesser Calamint | #1 Cont. | 18" o.c. |
| | CL2 | 576 | Coreopsis lanceolata | Lanceleaf Tickseed | #1 Cont. | 18" o.c. |
| | DT | 217 | Deschampsia cespitosa | Tufted Hair Grass | #1 Cont. | 24" o.c. |
| | | 10,266 sf | SEDGE MEADOW | | | |
| | CP2 | 2,000 | Carex pensylvanica | Pennsylvania Sedge | Quart | 16" o.c. |
| | CR3 | 2,000 | Carex radiata | Eastern Star Sedge | Quart | 16" o.c. |
| | CW | 2,000 | Carex woodii | Pretty Sedge | Quart | 16" o.c. |
| | BT2 | 3,556 | Naturalizing Daffodil Bulbs | | Bulb | |
| GROUND COVERS | | | | | | |
| | | 101,950 sf | TURF SOD | | | |
| | | 3,570 sf | SEDGE MIX #1 | | | |
| | CA | 835 | Carex albicans | White-tinged Sedge | Quart | 16" o.c. |
| | CE3 | 626 | Carex ebumea | Bristleleaf Sedge | Quart | 16" o.c. |
| | CR4 | 626 | Carex rosea | Rosy Sedge | Quart | 16" o.c. |

N

0 200' 400'

SCALE IN FEET

| No. | Revision/Issue | Date |
|---|---|---|
| 2 | Addendum #2 | 7/9/2026 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED

STATE OF MISSOURI · CRAIG A. RHODES · NUMBER LA-1999140495 · LANDSCAPE ARCHITECT · 6.30.26

CRAIG A. RHODES
MISSOURI L.A. NO. 1999140495


Vireo
414 Oak Street, Suite 101
Kansas City, Missouri
64106
P 816-756-8690

Missouri State Certificate of Authority Numbers:
Landscape Architecture: 2026026588


76 DESIGN COLLECTIVE

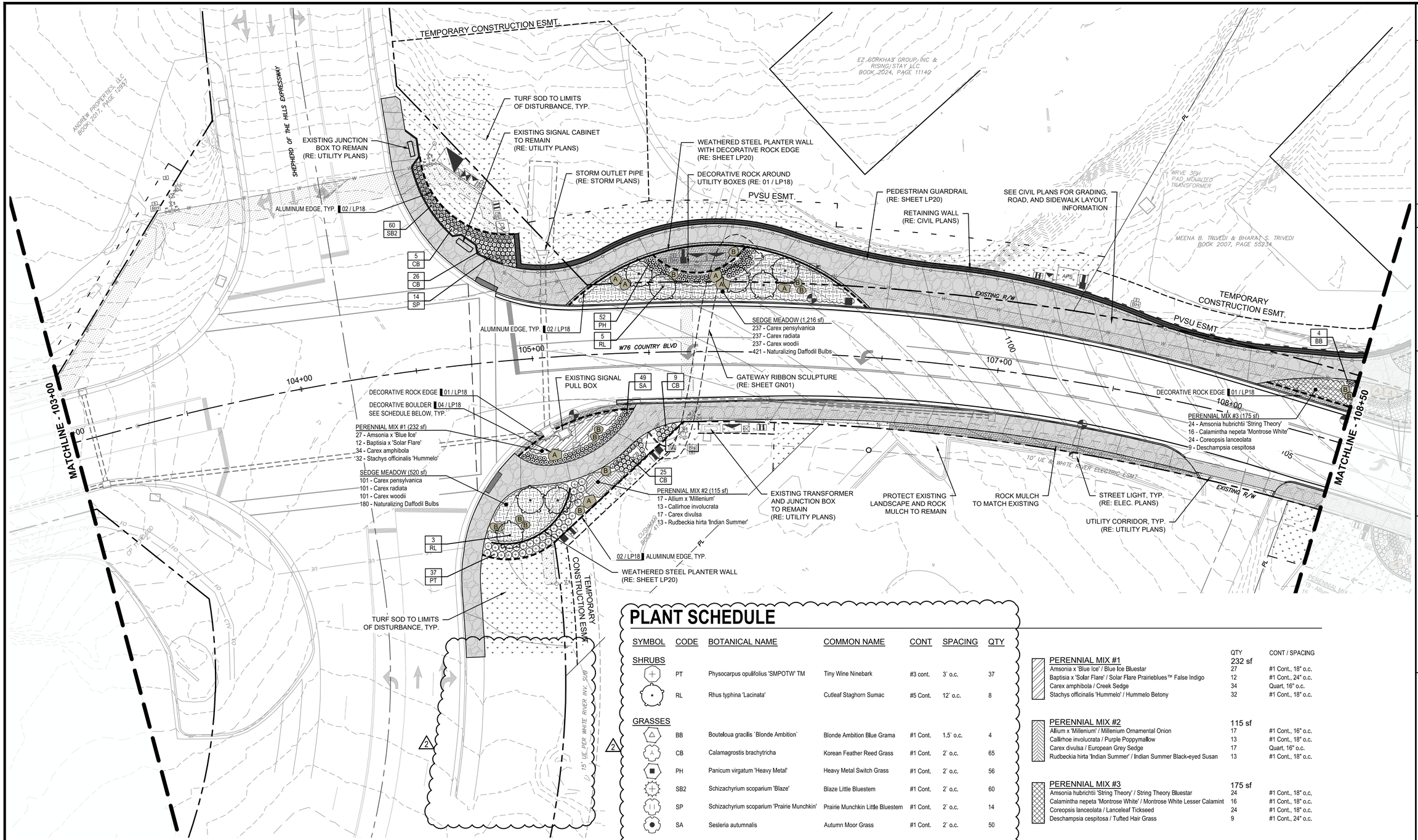
W. 76 COUNTRY BLVD STREETSCAPE
SEGMENTS 1 & 2
CITY OF BRANSON, MISSOURI

OVERALL LANDSCAPE PLAN

DATE: 6/30/2026

JOB NUMBER: 4515

SHEET
LP00 OF 39




## PLANT SCHEDULE

| SYMBOL | CODE | BOTANICAL NAME | COMMON NAME | CONT | SPACING | QTY |
|---|---|---|---|---|---|---|
| **SHRUBS** | | | | | | |
| | PT | Physocarpus opulifolius 'SMPOTW' TM | Tiny Wine Ninebark | #3 cont. | 3` o.c. | 37 |
| | RL | Rhus typhina 'Lacinata' | Cutleaf Staghorn Sumac | #5 Cont. | 12` o.c. | 8 |
| **GRASSES** | | | | | | |
| | BB | Bouteloua gracilis `Blonde Ambition` | Blonde Ambition Blue Grama | #1 Cont. | 1.5` o.c. | 4 |
| | CB | Calamagrostis brachytricha | Korean Feather Reed Grass | #1 Cont. | 2` o.c. | 65 |
| | PH | Panicum virgatum 'Heavy Metal' | Heavy Metal Switch Grass | #1 Cont. | 2` o.c. | 56 |
| | SB2 | Schizachyrium scoparium 'Blaze' | Blaze Little Bluestem | #1 Cont. | 2` o.c. | 60 |
| | SP | Schizachyrium scoparium 'Prairie Munchkin' | Prairie Munchkin Little Bluestem | #1 Cont. | 2` o.c. | 14 |
| | SA | Sesleria autumnalis | Autumn Moor Grass | #1 Cont. | 2` o.c. | 50 |

| | | QTY | CONT / SPACING |
|---|---|---|---|
| | **PERENNIAL MIX #1** | 232 sf | |
| | Amsonia x 'Blue Ice' / Blue Ice Bluestar | 27 | #1 Cont., 18" o.c. |
| | Baptisia x 'Solar Flare' / Solar Flare Prairieblues™ False Indigo | 12 | #1 Cont., 24" o.c. |
| | Carex amphibola / Creek Sedge | 34 | Quart, 16" o.c. |
| | Stachys officinalis 'Hummelo' / Hummelo Betony | 32 | #1 Cont., 18" o.c. |
| | **PERENNIAL MIX #2** | 115 sf | |
| | Allium x 'Millenium' / Millenium Ornamental Onion | 17 | #1 Cont., 16" o.c. |
| | Callirhoe involucrata / Purple Poppymallow | 13 | #1 Cont., 18" o.c. |
| | Carex divulsa / European Grey Sedge | 17 | Quart, 16" o.c. |
| | Rudbeckia hirta 'Indian Summer' / Indian Summer Black-eyed Susan | 13 | #1 Cont., 18" o.c. |
| | **PERENNIAL MIX #3** | 175 sf | |
| | Amsonia hubrichtii 'String Theory' / String Theory Bluestar | 24 | #1 Cont., 18" o.c, |
| | Calamintha nepeta 'Montrose White' / Montrose White Lesser Calamint | 16 | #1 Cont., 18" o.c. |
| | Coreopsis lanceolata / Lanceleaf Tickseed | 24 | #1 Cont., 18" o.c. |
| | Deschampsia cespitosa / Tufted Hair Grass | 9 | #1 Cont., 24" o.c. |
| | **SEDGE MEADOW** | 1,736 sf | |
| | Carex pensylvanica / Pennsylvania Sedge | 338 | Quart, 16" o.c. |
| | Carex radiata / Eastern Star Sedge | 338 | Quart, 16" o.c. |
| | Carex woodii / Pretty Sedge | 338 | Quart, 16" o.c. |
| | Naturalizing Daffodil Bulbs | 601 | Bulb |
| | **TURF SOD** (RE: CITY SPECIFICATION 8200 - SEEDING AND SODDING) | 7,967 sf | |

## BOUNDER SCHEDULE

| | DESCRIPTION | QTY. |
|---|---|---|
| A | **LARGE LIMESTONE MOSS BOULDER** APPROXIMATELY 5' TO 6' SIZE | 7 |
| B | **MEDIUM LIMESTONE MOSS BOULDER** APPROXIMATELY 3' TO 4' SIZE | 13 |

**NOTE:**

SEE SHEET LP20 FOR LAYOUT INFORMATION FOR THE RIBBON CURB, ALUMINUM EDGE, WEATHERED STEEL PLANTER WALL, AND PEDESTRIAN GUARDRAIL.

SEE SHEET LP19 FOR PERENNIAL MIX PLANTING LAYOUT INSTRUCTIONS.

0 20' 40'
SCALE IN FEET

| No. | Revision/Issue | Date |
|---|---|---|
| 4 | Addendum #2 | 7/9/2026 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED

STATE OF MISSOURI
CRAIG A. RHODES
NUMBER LA-1999140495
LANDSCAPE ARCHITECT
6/30/26

CRAIG A. RHODES
MISSOURI L.A. NO. 1999140495


Vireo
414 Oak Street, Suite 101
Kansas City, Missouri
64106
P 816-756-5690
Missouri State Certificate of Authority Numbers:
Landscape Architecture: 2005035858

76 DESIGN COLLECTIVE


W. 76 COUNTRY BLVD STREETSCAPE
SEGMENTS 1 & 2
CITY OF BRANSON, MISSOURI

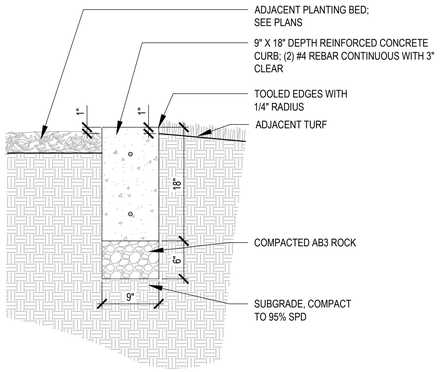
# LANDSCAPE PLAN

W 76 COUNTRY BLVD - 103+00.00 TO 108+50.00

DATE: 6/30/2026

JOB NUMBER: 4515

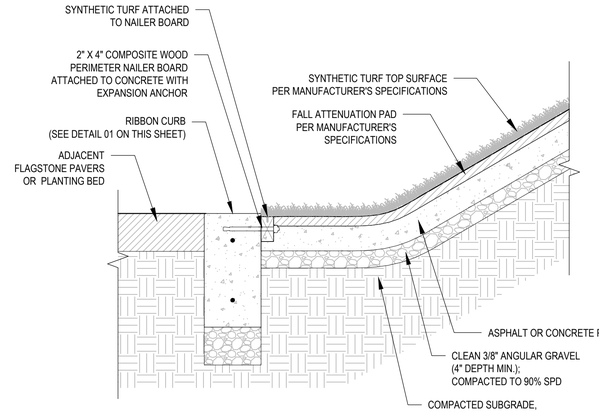
SHEET LP01 OF 39



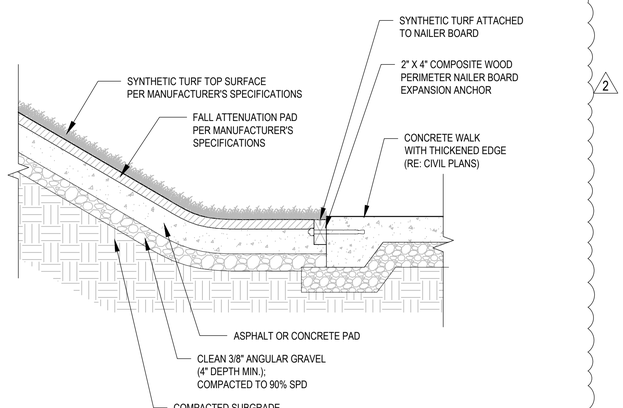

# RIBBON CURB 01
N.T.S.

**NOTES:**

1. INFORMATION SHOWN FOR BASIS OF DESIGN IS FOR BID PURPOSES ONLY.
2. SYNTHETIC TURF MOUNDS TO BE DESIGNED AND CONSTRUCTED BY SYNTHETIC TURF SURFACE INSTALLER. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND/OR INSTALLATION.
3. SYNTHETIC TURF SURFACING MUST BE INSTALLED AND SEAMED WITH ADJACENT PIECES RUNNING IN THE SAME DIRECTION; SEAMS SHOULD BE GLUED WITH SUITABLE SEAMING GLUE AND SEAMING CLOTH, NOT ADHESIVE TAPE.
4. SYNTHETIC TURF SURFACING SHALL BE INSTALLED IN COMPLETE ACCORDANCE WITH SPECIFICATIONS BY FACTORY AUTHORIZED INSTALLERS.




SECTION AT RIBBON CURB




SECTION AT SIDEWALK

# SYNTHETIC TURF WITH PLAY MOUND 02
N.T.S.

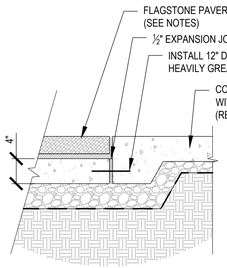
**NOTES:**

1. 2" THICKNESS 'ARKANSAS CHERRY' FLAGSTONE PAVERS, AS PROVIDED BY:

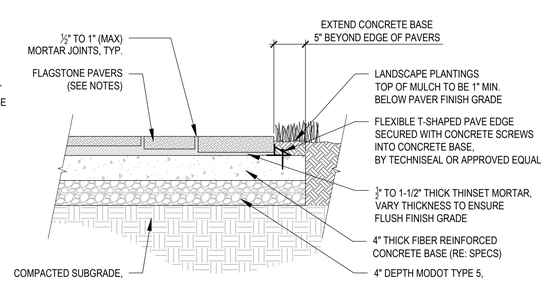
   SITEONE STONE CENTER
   2515 SEMCO DR
   BELTON, MO 64012
   PHONE: (816) 318-1203
   (OR APPROVED EQUAL)

   PAVERS SHALL CONSIST OF IRREGULAR FLAGSTONE MATERIAL RANGING IN SIZE FROM 18" TO 36" IN LENGTH AND WIDTH.
2. FLAGSTONE PAVING JOINTS TO BE ⅜" TO 1" (MAX), MORTAR COLOR TO MATCH ADJACENT STONE.
3. CONTRACTOR SHALL PROVIDE A 8' X 8' MOCK-UP AT THE PLANNED LOCATION OF FLAGSTONE PAVING FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

ARKANSAS CHERRY FLAGSTONE
DESIGN INTENT EXAMPLE




PAVERS AT CONCRETE PAVEMENT




PAVERS AT PLANTING BED EDGE

# FLAGSTONE PAVERS 03
N.T.S.

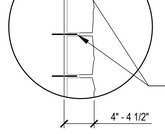
**NOTES:**

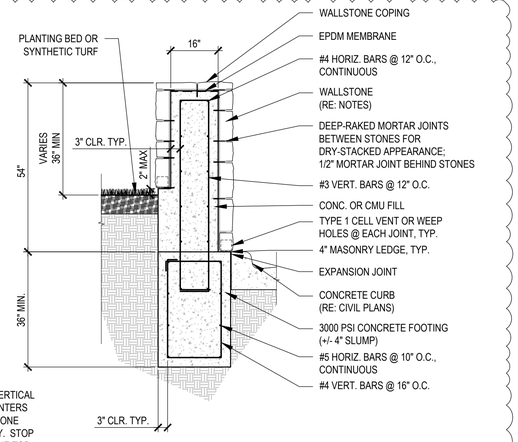
1. WALLSTONE SHALL BE 4" (BED DEPTH) IRREGULAR SHAPED CHESTNUT/OZARK CUT LIMESTONE, AS SUPPLIED BY:
   PALISADES STONE
   1350 E COMMERCIAL STREET
   SPRINGFIELD, MO 65803
   P: 417-831-5048
   (OR APPROVED EQUIVALENT)
2. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND STONE SAMPLES FOR REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE.
3. SET STONE WITH DOVETAIL SLOTS AND ANCHORS AT 16" CENTERS EACH WAY. STONE SHALL HAVE A DRY-STACKED APPEARANCE. SEE SPECIFICATIONS FOR 'ANCHORED STONE MASONRY VENEER' AND CONCRETE CONSTRUCTION. ALL ITEMS TO BE SUBSIDIARY TO 'STONE WALL.'
4. ALL REINFORCING SHALL BE 3" CLEAR UNLESS OTHERWISE NOTED.
5. USE LARGER STONES FOR COPING, APPROXIMATELY 10" TO 12" WIDE.
6. SEE CIVIL PLANS FOR ELEVATIONS BEHIND AND IN FRONT OF WALLS.

STONE WALL
BASIS OF DESIGN INTENT EXAMPLE

NOTES:

APPLY DAMP PROOFING TO ALL CIP CONCRETE BELOW FINISHED GRADE. BEGIN DAMP PROOFING 3" BELOW FINISHED GRADE & EXTEND TO TOP OF FOOTING.



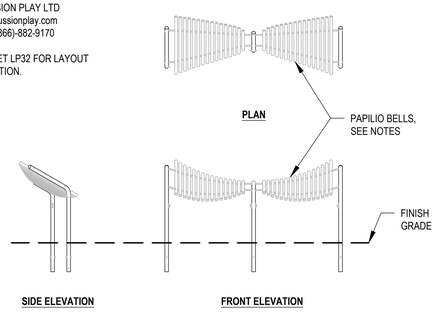




# STONE WALL 04
N.T.S.

**NOTES:**

1. MODEL: PAPILIO BELLS (PP-PAPI-GF) GROUND MOUNTED PER MANUFACTURER'S RECOMMENDATIONS

   AS MANUFACTURED BY:
   PERCUSSION PLAY LTD
   www.percussionplay.com
   PHONE: (866)-882-9170
2. SEE SHEET LP32 FOR LAYOUT INFORMATION.

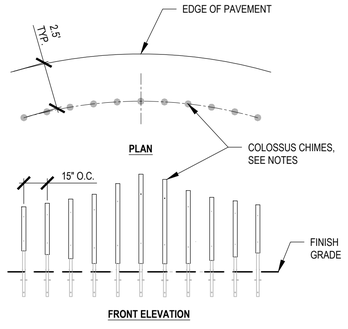



# PAPILIO BELLS 05
N.T.S.

**NOTES:**

1. MODEL: COLOSSUS CHIMES (PP-COLO-ST-11-GF) GROUND MOUNTED PER MANUFACTURER'S RECOMMENDATIONS

   AS MANUFACTURED BY:
   PERCUSSION PLAY LTD
   www.percussionplay.com
   PHONE: (866)-882-9170
2. SEE SHEET LP32 FOR LAYOUT INFORMATION.

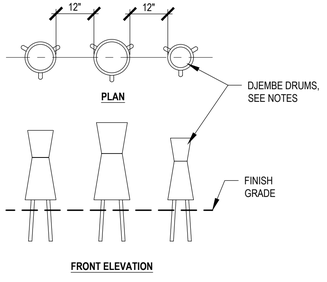



# COLOSSUS CHIMES 06
1/4" = 1'-0"

**NOTES:**

1. MODEL: DJEMBE DRUMS (PP-DJEM-ST-03-GF) GROUND MOUNTED PER MANUFACTURER'S RECOMMENDATIONS

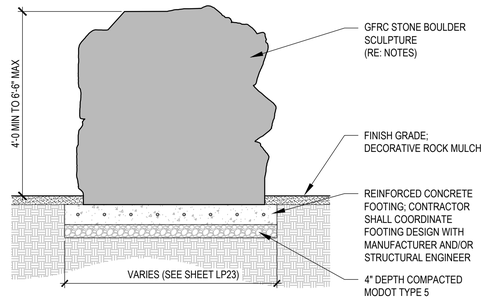
   AS MANUFACTURED BY:
   PERCUSSION PLAY LTD
   www.percussionplay.com
   PHONE: (866)-882-9170
2. SEE SHEET LP32 FOR LAYOUT INFORMATION.




# DJEMBE DRUMS 07
N.T.S.

**NOTES:**

1. DESIGN OF ROCK STRUCTURE AND CONCRETE FOOTING SHALL BE BY CONTRACTOR. SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE. SUBMITTAL SHALL INCLUDE STRUCTURAL DRAWINGS SEALED BY A STATE OF MISSOURI LICENSED ENGINEER.
2. CONTRACTOR SHALL PROVIDE MOCK-UP FOR OWNER ACCEPTANCE PRIOR TO COMMENCING WORK.
3. REFER TO SPECIFICATION 033715 'ARTIFICIAL ROCK WORK' FOR OTHER REQUIREMENTS.




# GFRC STONE BOULDER SCULPTURE 08
N.T.S.

| No. | Revision/Issue | Date |
|---|---|---|
| 2 | Addendum #2 | 7/9/2026 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED

STATE OF MISSOURI · CRAIG A RHODES · NUMBER LA-1999140495 · LANDSCAPE ARCHITECT

CRAIG A. RHODES
MISSOURI L.A. NO. 1999140495


Vireo
414 Oak Street, Suite 101
Kansas City, Missouri
64106
P 816-756-8690
Missouri State Certificate of Authority Numbers:
Landscape Architecture: 2006026588

76 DESIGN COLLECTIVE


W. 76 COUNTRY BLVD STREETSCAPE
SEGMENTS 1 & 2
CITY OF BRANSON, MISSOURI

SITE DETAILS

DATE: 6/30/2026

JOB NUMBER: 4515

SHEET
LP34 OF 39

## BENCH 01

N.T.S.

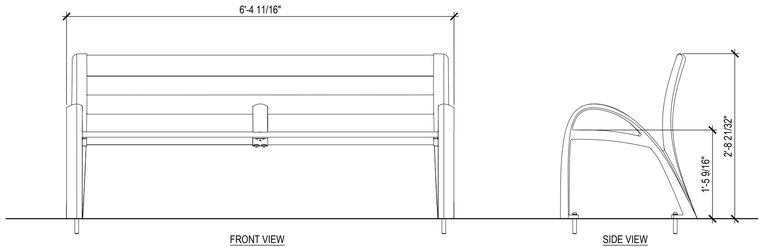
NOTES:

1. MODEL: CAMBER (SBCAM-72BA) WITH CENTER ARMREST;
   SURFACE MOUNTED PER MANUFACTURER'S RECOMMENDATIONS

   SLATS AND FRAME COLOR: POWDERCOAT, DARK CORTEN TEXTURE

   AS MANUFACTURED BY:
   FORMS+ SURFACES
   www.forms-surfaces.com

   CONTACT: JACKIE DIETZ
   PHONE: (630)-207-9908




FRONT VIEW

SIDE VIEW

## LOUNGE CHAIR 02

N.T.S.

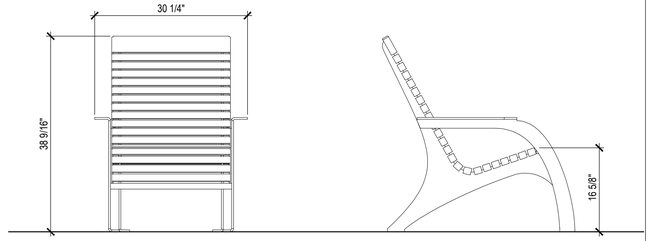
NOTES:

1. MODEL: 720 CHAIR (MCH-0720-00008) 2

   SLATS AND FRAME COLOR: POWDERCOAT, SAFFRON YELLOW

   AS MANUFACTURED BY:
   MAGLIN CORPORATION
   999 18TH STREET, SUITE 3000
   DENVER, CO 80202

   CONTACT: ADAM TRAKINSKAS
   PHONE: 1-800-716-5506 x 1193




FRONT VIEW

SIDE VIEW

## BIKE RACK 03

N.T.S.

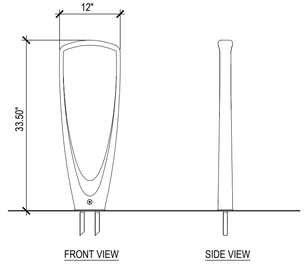
NOTES:

1. MODEL: TRIO BIKE RACK (SKTRO);
   SURFACE MOUNTED WITH EMBEDDED ANCHORS
   FRAME COLOR: POWDERCOAT, DARK CORTEN TEXTURE
   QTY: 18

   AS MANUFACTURED BY:
   FORMS+ SURFACES
   www.forms-surfaces.com

   CONTACT: JACKIE DIETZ
   PHONE: 630-207-9908

2. CONTRACTOR SHALL COORDINATE FINAL LOCATION AND PLACEMENT OF BIKE RACKS WITH OWNER DURING CONSTRUCTION.




FRONT VIEW

SIDE VIEW

## TABLE 04

N.T.S.

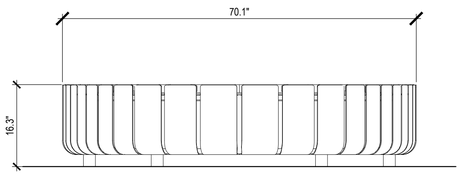
NOTES:

1. MODEL: STRIPES 3610 LARGE

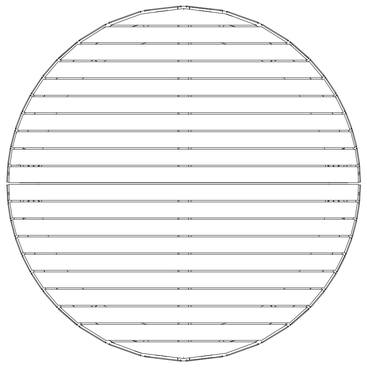
   FRAME COLOR: POWDERCOATED, NUT BROWN (RAL-8011)
   TOP SLATS: KEBONY WOOD

   AS MANUFACTURED BY:
   VESTRE
   www.vestre.com

   CONTACT: JOHN PATTERSON
   PHONE: (512)-554-1041




FRONT VIEW



TOP VIEW

## PORCH SWING 05

NOTES:

1. PORCH SWING BASIS OF DESIGN:

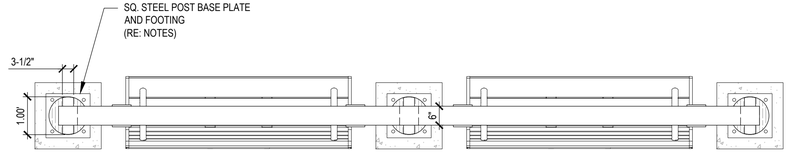
   FRAME: DOUBLE BAY U-FRAME STRUCTURE
   WITH LAMINATED KEBONY WOOD POST CLADDING
   FRAME COLOR: POWDERCOATED ONYX

   SWING: AUSTIN SWING BENCH
   WITH KEBONY WOOD SLATS AND
   ONYX FRAME COLOR

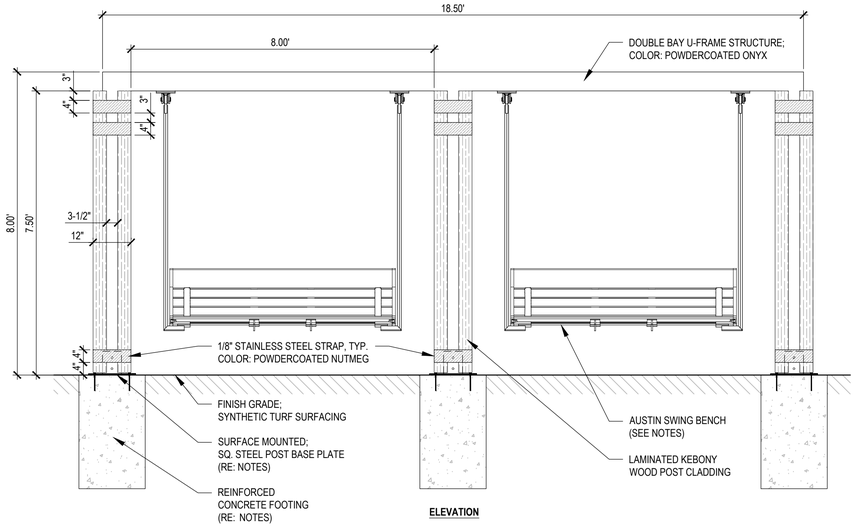
   AS MANUFACTURED BY:
   LANDSCAPE FORMS STUDIO 431
   7800 MICHIGAN AVE
   KALAMAZOO, MI 49048
   (OR APPROVED EQUAL)

   CONTACT: STACY ERNST
   PHONE: 816-444-4376

2. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. MANUFACTURER SHALL PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.
3. MANUFACTURER PROVIDED SHOP DRAWINGS DOES NOT INCLUDE ATTACHMENT OR FOOTING DESIGN. CONTRACTOR SHALL PROVIDE ATTACHMENT AND CONCRETE FOOTING DESIGN BY A LICENSED STRUCTURAL ENGINEER.
4. ALL ATTACHMENTS AND HARDWARE SHALL BE POWDERCOATED TO MATCH FRAME OR STEEL STRAPS.




PLAN




ELEVATION

| No. | Revision/Issue | Date |
|---|---|---|
| 2 | Addendum #2 | 7/9/2026 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED

STATE OF MISSOURI
CRAIG A. RHODES
NUMBER LA-1999140495
LANDSCAPE ARCHITECT
6-30-26

CRAIG A. RHODES
MISSOURI L.A. NO. 1999140495


Vireo
414 Oak Street, Suite 101
Kansas City, Missouri
64106
P 816-756-8690

Missouri State Certificate of Authority Numbers:
Landscape Architecture: 2006020588

76 DESIGN COLLECTIVE


W. 76 COUNTRY BLVD STREETSCAPE
SEGMENTS 1 & 2
CITY OF BRANSON, MISSOURI

SITE DETAILS

DATE: 6/30/2026

JOB NUMBER: 4515

SHEET
LP35 OF 39

NOTES:
1. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. GUARDRAIL SHALL FOLLOW SIDEWALK GRADE. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER AND PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.
2. ALL POSTS, FRAMING, ATTACHMENTS, AND HARDWARE SHALL BE POWDER COATED TO MATCH COLOR OF PANEL.
3. MATERIAL SAMPLES TO BE PROVIDED FOR OWNER'S REPRESENTATIVE REVIEW AND APPROVAL PRIOR TO FABRICATION.
4. ALL FASTENERS SHALL BE STAINLESS STEEL

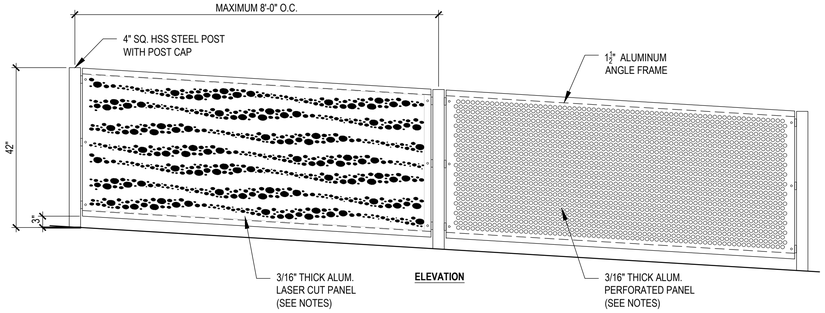
LASER CUT PANEL BASIS OF DESIGN:
DESIGN: MODIFIED STREAM PATTERN
PANEL SIZE: VARIES
MATERIAL: 3/16" ALUMINUM [ASTM B209]
COLOR: POWDERCOATED RUST

AS MANUFACTURED BY:
MOZ DESIGNS
www.mozdesigns.com
(OR APPROVED EQUAL)

PERFORATED PANEL BASIS OF DESIGN:
DESIGN: PERFORATED METAL, 3/8" DIA., 3/4" STAGGERED CENTERS
PANEL SIZE: VARIES
MATERIAL: 3/16" ALUMINUM [ASTM B209]
COLOR: POWDERCOATED RUST

AS MANUFACTURED BY:
MOZ DESIGNS
www.mozdesigns.com
(OR APPROVED EQUAL)

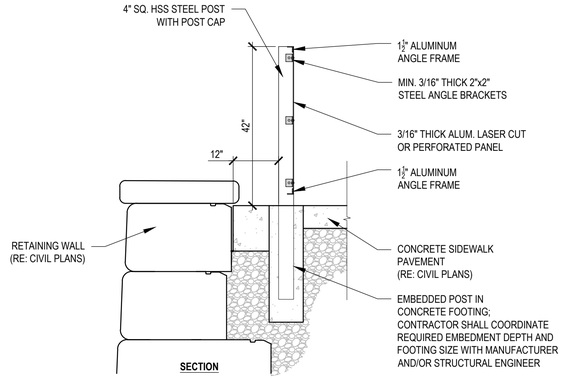
2




ELEVATION

| LASER CUT PANEL | LASER CUT PANEL | LASER CUT PANEL | LASER CUT PANEL | PERFORATED PANEL | PERFORATED PANEL | PERFORATED PANEL |
|---|---|---|---|---|---|---|

PATTERN
BEGIN ON NORTH END AND REPEAT




SECTION

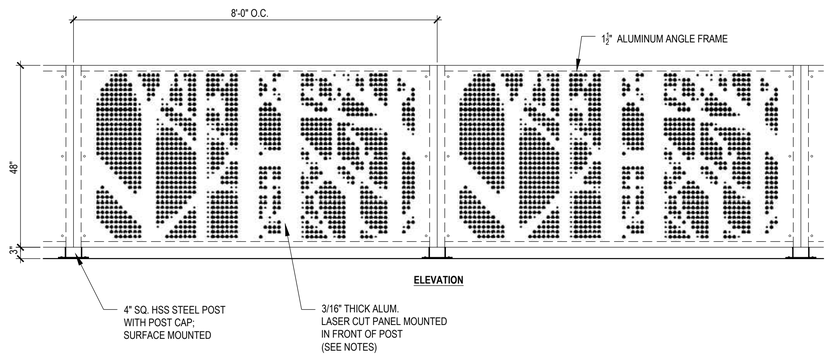
# PEDESTRIAN GUARDRAIL N.T.S. 01

NOTES:
1. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER AND PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.
2. ALL POSTS, FRAMING, ATTACHMENTS, AND HARDWARE SHALL BE POWDER COATED TO MATCH COLOR OF PANEL.
3. SUBMIT MATERIAL SAMPLES TO OWNER'S REPRESENTATIVE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
4. ALL FASTENERS SHALL BE STAINLESS STEEL

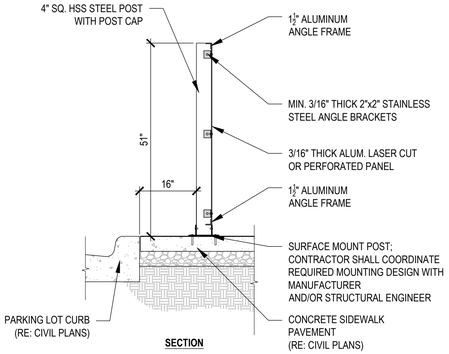
LASER-CUT PANEL BASIS OF DESIGN:
DESIGN: MODIFIED GROVE SERIES PANEL
PANEL SIZE: 48" x 96"
MATERIAL: 3/16" ALUMINUM [ASTM B209]
COLOR: POWDERCOATED RUST

AS MANUFACTURED BY:
MOZ DESIGNS
www.mozdesigns.com
(OR APPROVED EQUAL)

2




ELEVATION




SECTION

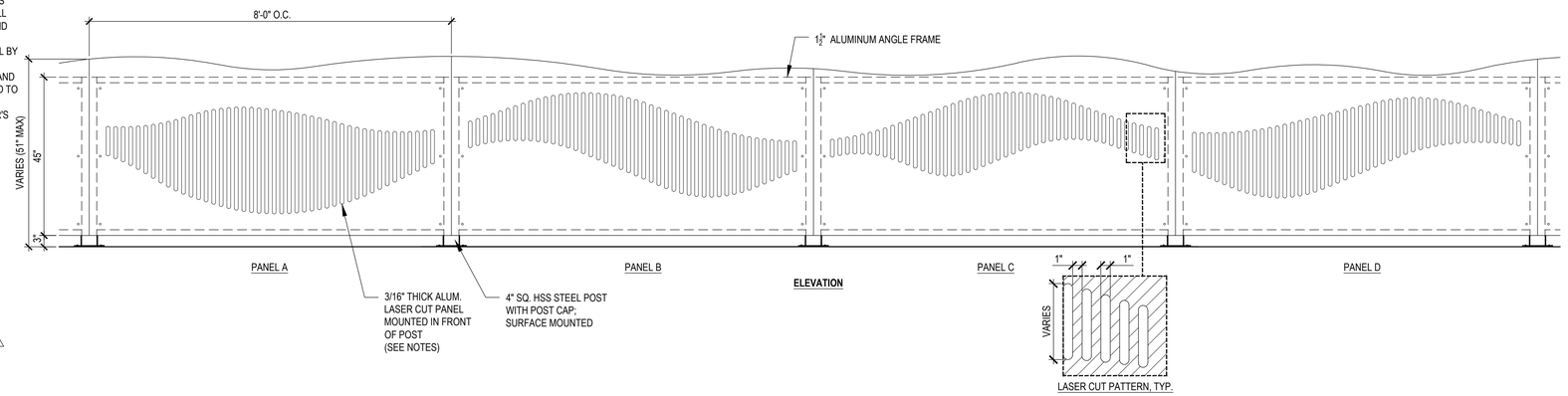
# PARKING LOT BARRIER SCREEN - WOODLAND N.T.S. 02

NOTES:
1. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER AND PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.
2. ALL POSTS, FRAMING, ATTACHMENTS, AND HARDWARE SHALL BE POWDER COATED TO MATCH COLOR OF PANEL.
3. SUBMIT MATERIAL SAMPLES TO OWNER'S REPRESENTATIVE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
4. ALL FASTENERS SHALL BE STAINLESS STEEL.

LASER CUT PANEL BASIS OF DESIGN:
DESIGN: CUSTOM LASER CUT PATTERN
PANEL SIZE: VARIES, 48" x 96" MAX.
MATERIAL: 3/16" ALUMINUM [ASTM B209]
COLOR: POWDERCOATED RUST

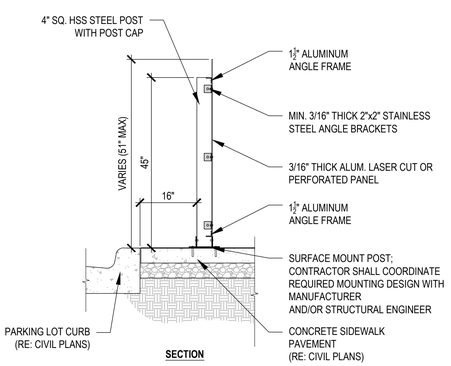
AS MANUFACTURED BY:
MOZ DESIGNS
www.mozdesigns.com
(OR APPROVED EQUAL)

2




ELEVATION

LASER CUT PATTERN, TYP.




SECTION

# PARKING LOT BARRIER SCREEN - OZARK HILLS N.T.S. 03

| No. | Revision/Issue | Date |
|---|---|---|
| 2 | Addendum #2 | 7/9/2026 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED

STATE OF MISSOURI
CRAIG A. RHODES
NUMBER LA-1999140495
LANDSCAPE ARCHITECT
6.30.26

CRAIG A. RHODES
MISSOURI L.A. NO. 1999140495


Vireo
414 Oak Street, Suite 101
Kansas City, Missouri
64106
P 816-756-8690
Missouri State Certificate of Authority Numbers:
Landscape Architecture: 2006026588


76 DESIGN COLLECTIVE

W. 76 COUNTRY BLVD STREETSCAPE
SEGMENTS 1 & 2
CITY OF BRANSON, MISSOURI

SITE DETAILS

DATE: 6/30/2026

JOB NUMBER: 4515

SHEET
LP36 OF 39

NOTES:

1. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER AND PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.

   WEATHERED STEEL PLANTER WALL
   BASIS OF DESIGN:

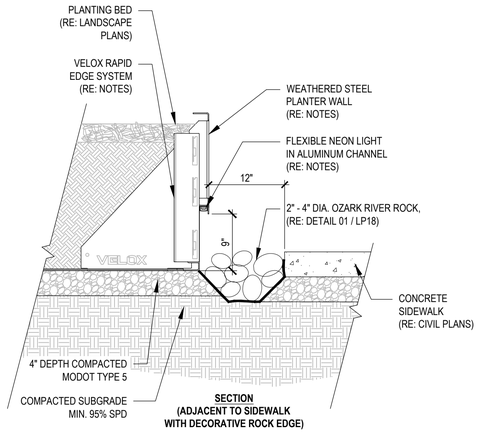
   MODEL: STAPEL RAISED PLANTER EDGE WITH INTEGRATED LIGHTING AND VELOX RAPID EDGE SYSTEM
   MATERIAL: WEATHERING STEEL

   AS MANUFACTURED BY:
   LOGIC MANAUFACTURED BESPOKE
   450 LEXINGTON AVE
   NEW YORK, NY 10017
   (OR APPROVED EQUAL)

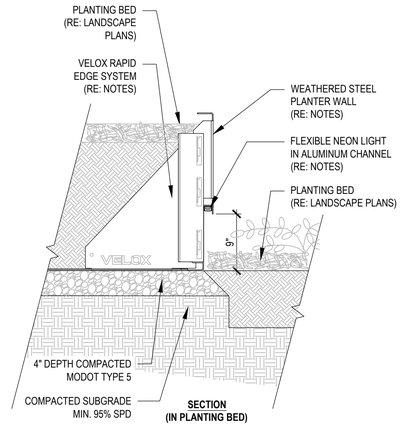
2. FLEXIBLE NEON LIGHT IN ALUMINUM CHANNEL BASIS OF DESIGN:

   MANUFACTURER: KELVIX
   MODEL: ENDURAWAVE NARROW RGBW WITH BENDING FLEXIBILITY;
   5.95 WATTS PER FOOT:
   24V DC INPUT VOLTAGE
   (OR APPROVED EQUAL)

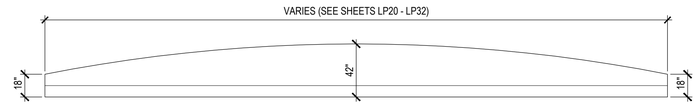
   CONTACT: KATE WIMER,
   MERCER ZIMMERMAN LIGHTING
   P: 913-488-6444



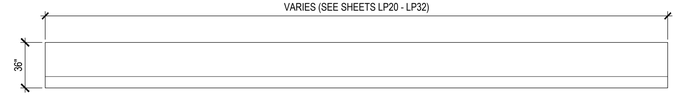

**SECTION (ADJACENT TO SIDEWALK WITH DECORATIVE ROCK EDGE)**



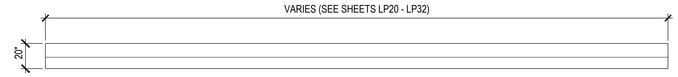

**SECTION (IN PLANTING BED)**




**CURVED PLANTER WALL TYPE A-1 ELEVATION**




**PLANTER WALL TYPE A-2 ELEVATION**




**PLANTER WALL TYPE A-3 ELEVATION**

**FIELD VERIFY CONSTRUCTED CONDITIONS PRIOR TO WALL FABRICATION**

# WEATHERED STEEL PLANTER WALL - TYPE A

N.T.S. **01**

NOTES:

1. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER AND PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.

2. WEATHERED STEEL PLANTER WALL
   BASIS OF DESIGN:

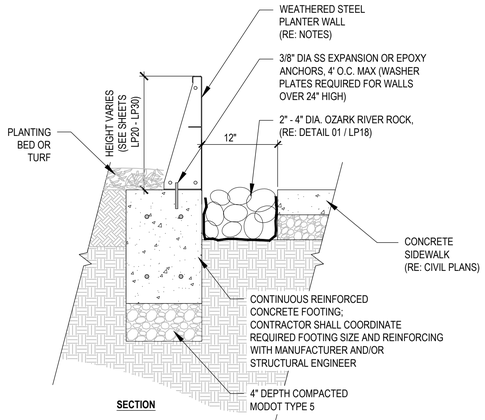
   MODEL: ANCHORED KITSAP MODULAR RETAINING WALL WITH CUSTOM ACCESSORY POCKETS TO ACCOMODATE RECESSED WALL LIGHT
   MATERIAL: WEATHERING STEEL

   AS MANUFACTURED BY:
   TOURNESOL SITE WORKS
   32990 ALVARADO-NILES RD., SUITE 990
   UNION CITY, CA 94587
   (OR APPROVED EQUAL)

   CONTACT: MARK PARRA
   P: 872-335-6677

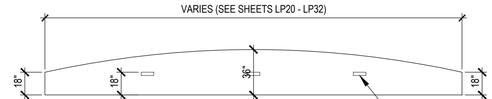
3. RECESSED WALL LIGHT BASIS OF DESIGN:

   MANUFACTURER: BEGA
   MODEL: 33 054, 3000 K
   COLOR: GRAPHITE
   7.0 WATTS;
   220 - 240V VOLT LED POWER SUPPLY
   (OR APPROVED EQUAL)

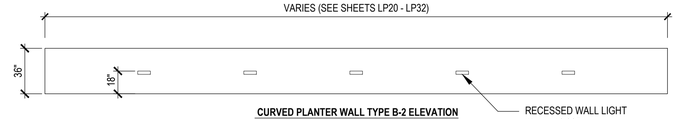



**SECTION**


**TYPICAL SEAM CONNECTION**




**TYPE B-1 ELEVATION**




**CURVED PLANTER WALL TYPE B-2 ELEVATION**

**FIELD VERIFY CONSTRUCTED CONDITIONS PRIOR TO WALL FABRICATION**

# WEATHERED STEEL PLANTER WALL - TYPE B

N.T.S. **02**

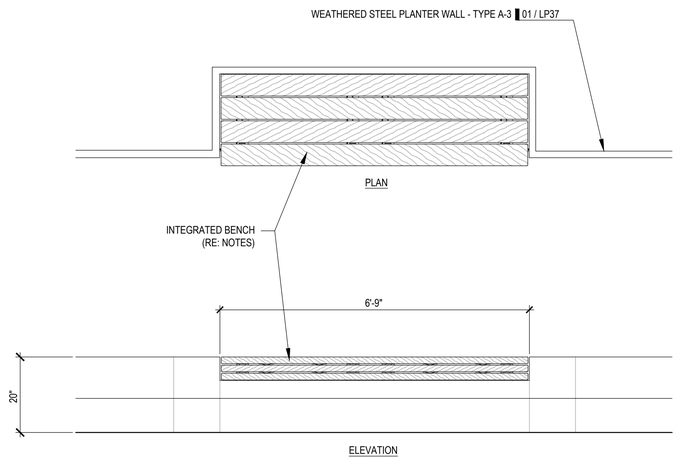
NOTES:

1. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER AND PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.

2. INTEGRATED BENCH BASIS OF DESIGN:

   MODEL: PLANO BENCH
   MATERIAL: IROKO WOOD
   FIXING SYSTEM: INTEGRATED

   AS MANUFACTURED BY:
   LOGIC MANAUFACTURED BESPOKE
   450 LEXINGTON AVE
   NEW YORK, NY 10017
   (OR APPROVED EQUAL)




**ELEVATION**

# WEATHERED STEEL PLANTER WALL BENCH

N.T.S. **03**

| No. | Revision/Issue | Date |
|---|---|---|
| 2 | Addendum #2 | 7/9/2026 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED

STATE OF MISSOURI
CRAIG A. RHODES
NUMBER LA-1999140495
LANDSCAPE ARCHITECT
6.30.26

CRAIG A. RHODES
MISSOURI L.A. NO. 1999140495


Vireo
414 Oak Street, Suite 101
Kansas City, Missouri
64106
P 816-756-8690
Missouri State Certificate of Authority Numbers:
Landscape Architecture: 2006026588

76 DESIGN COLLECTIVE


W. 76 COUNTRY BLVD STREETSCAPE
SEGMENTS 1 & 2
CITY OF BRANSON, MISSOURI

SITE DETAILS

DATE: 6/30/2026

JOB NUMBER: 4515

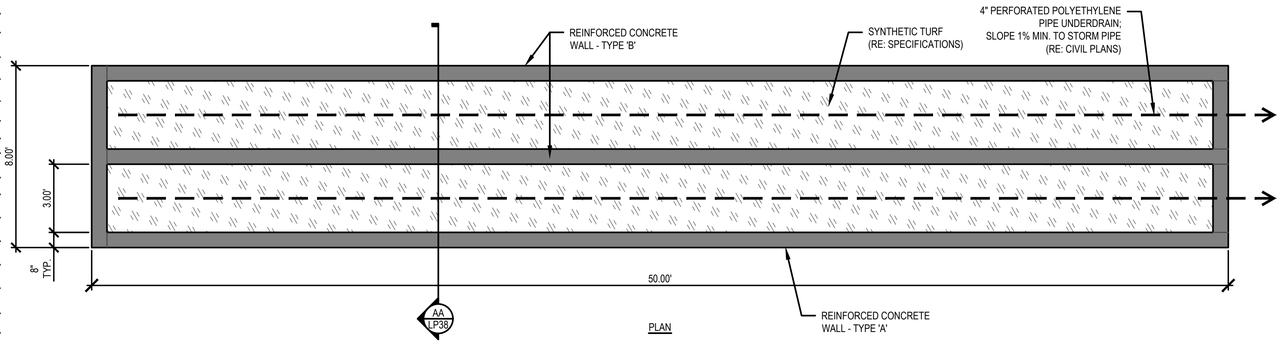
SHEET
LP37 OF 39

NOTES:

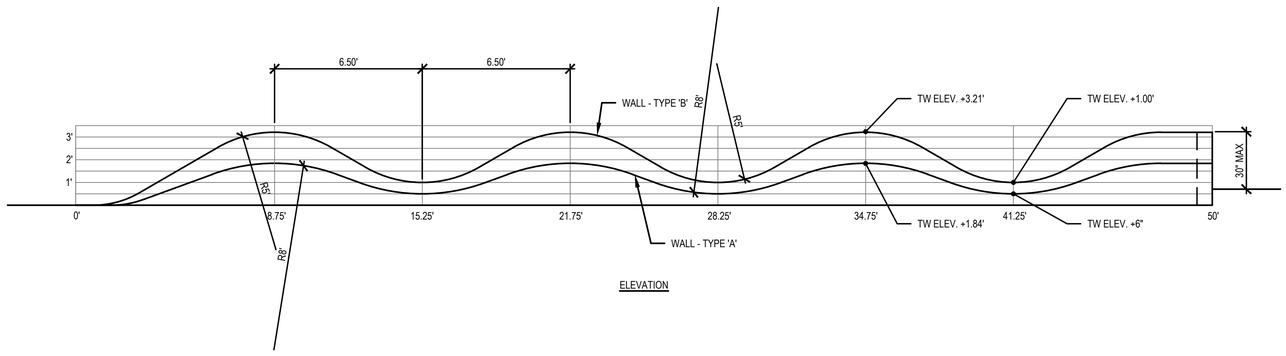
1. DETAIL PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY TO CONVEY THE BASIS OF DESIGN INTENT. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.
2. EXPOSED FACES OF WALL SHALL RECEIVE A SMOOTH RUBBED FINISH PER CONCRETE INDUSTRY BEST PRACTICES.
3. FOR HORIZONTAL BARS, PROVIDE SPLICE = 30".
4. SYNTHETIC TURF SURFACING SHALL BE INSTALLED IN COMPLETE ACCORDANCE WITH SPECIFICATIONS BY FACTORY AUTHORIZED INSTALLERS.
5. CONTRACTOR SHALL COORDINATE GFRC MUSIC NOTE SCULPTURE DESIGN AND INSTALLATION WITH MANUFACTURER. PRIOR TO FABRICATION, SUBMIT SHOP DRAWINGS WITH SAMPLE FINISHES FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE.

MUSIC STAFF WAVY WALK BASIS OF DESIGN INTENT:

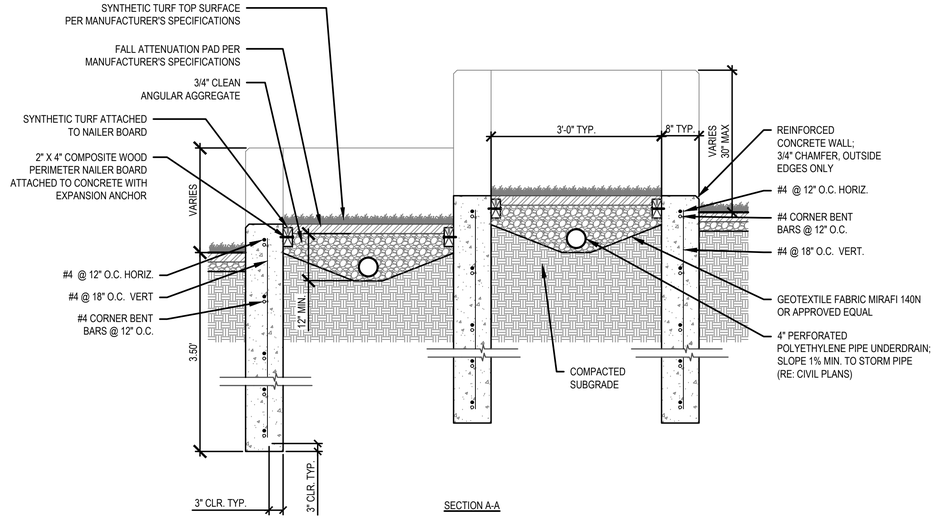
CUSTOM GFRC MUSIC NOTE SCULPTURES SECURELY ATTACHED TO CONCRETE; HEIGHT: +/- 5'-6" (RE: NOTES)




PLAN




ELEVATION




SECTION A-A

| No. | Revision/Issue | Date |
|---|---|---|
| 2 | Addendum #2 | 7/9/2026 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED

STATE OF MISSOURI · CRAIG A. RHODES · NUMBER LA-1999140495 · LANDSCAPE ARCHITECT

CRAIG A. RHODES
MISSOURI L.A. NO. 1999140495


Vireo
414 Oak Street, Suite 101
Kansas City, Missouri
64106
P 816-756-8690
Missouri State Certificate of Authority Numbers:
Landscape Architecture: 2006026586

76 DESIGN COLLECTIVE


W. 76 COUNTRY BLVD STREETSCAPE
SEGMENTS 1 & 2
CITY OF BRANSON, MISSOURI

SITE DETAILS

DATE: 6/30/2026

JOB NUMBER: 4515

SHEET
LP38 OF 39