TG13.1 - Roof Park Landscaping and Irrigation

Questions are numbered in the order received. Numbers missing in the sequence either have been answered in a previous response set or will be answered in a future set.

Question No.	Submission Date	Drawing No.	Document/ Spec. No.	Question	Response
TG13.1- 004	3/25/2015	A1-2912	N/A	Confirm that the Board Formed Concrete planters at GL 1.2 are meant to be poured around the structural fin walls.	Confirmed.
TG13.1- 005	3/25/2015	L1-9622, L1-8687, 2/L1- 8634		L1-8633 shows 1'6" of exposed stone at each tread, with an overlap between each level. L1-9622 shows that each Amphitheater Stair Stone Module has 1'6" total width which does not appear to allow for any overlap. 2/L1-8634 shows the overlap but does not indicate how much overlap is required. What is the stone overlap dimension? And how wide is each stone module meant to be?	The stone stair overlap dimension is +/- 2" and the exposed tread surface is 1'6". Please refer to the attached SKLA 381.1 for stone stair dimension clarifications.
TG13.1- 007	3/25/2015	L1-9622		Confirm that the length of each Amphitheater Stair Stone Module is 8 feet in length.	The amphitheater stair stone module varies. Refer to SKLA 381.1 attached to the Q&A TG13.1-005 response for stone module clarifications.
TG13.1- 008	3/25/2015	L1-9622		L1-9622 provides one typical Amphitheater Stair Stone Module to be applied to all tread levels and that the stone be typically aligned to each level above it. Since each level will have a different radius as it progresses further away from the radius reference point, the typical dimensions of each tread level should be different, similar to how the Stone Circular Planters are shown on L1-9626. Please provide updated details for the Amphitheater Stone Stairs.	The amphitheater stair stone module varies. Please refer to SKLA 381.1 attached to the Q&A TG13.1-005 response for stone module clarifications.
TG13.1- 009	3/25/2015	1/L1- 2642, 1/L1- 9601		Resin paving is required above the subslab in 1/L1-2642, but there is no depressed subslab as is typical for resin paving areas. Retention angle is shown to hold in the resin paving in 1/L1-9601. Confirm that depressions in the subslab are required for all angle shown in 1/L1-9601 and provide an updated detail for 1/L1-2642.	Confirmed. Depressions in the subslab at the restaurant deck resin paving area are required. Please refer to the attached SKLA 378-1 and 378-2 for the depressed slab location.

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TG13.1- 010	3/25/2015	1/L1- 2642, 1/L1- 9601, 3/A1- 8911	Clarify if the resin paving at the restaurant deck is able to push directly up to the restaurant or if retention angle is required. There is no retention angle shown in 1/L1-2642, 1/L1-9601, or 3/A1-8911. If retention angle is required, please provide updated details.	Retention angles are required at the restaurant deck resin paving area. Please refer to the attached SKLA 378-3 and 378-4 for details.
TG13.1- 011	3/25/2015	L1-7670, L1-7671, L1-7672	Do utility vaults need to be mechanically fastened to the topping slab? If so, provide details for this connection.	No. Utility vaults do not need to be mechanically fastened to the topping slab.
TG13.1- 012	3/25/2015	L1-4602	The invert Dimension at GL 1 / G shows a value of 843.42. This appears to be a typo. Please provide the correct invert dimension.	Please refer to the attached SKLA 382.1 to see the updated invert elevation at GL 1/G.
TG13.1- 013	3/25/2015	L1-6632	Vine plantings are indicated on GL 4, but there are no vine bubblers. Confirm that there should be vine bubblers on GL 4 and provide updated details.	Vine bubblers on GL 4 have been shown on sheet L1-6632. Please refer to the attached SKLA 388.1 and 388.2 to see vine bubbler locations.
TG13.1- 014	3/25/2015	L1-6632	Confirm that the Subsurface Drip Irrigation indicated as a broken line on L1-6632 is meant to be solid and is the same as the Subsurface Drip Irrigation indicated with a solid line on L1-6633 thru L1-6637.	Confirmed. The subsurface drip irrigation on L1-6632 is solid-line type. Please refer to SKLA 388.1 attached to Q&A TG13.1-013.
TG13.1- 016	3/25/2015	E1-2602, L1-1602	There is a conflict between the Utility Corridor Routing on E1-2602 and L1-1602. Which routing is correct and should be priced?	Please refer to the attached SKLA 379-1 REV, 379-2 REV, 379-3 REV, 379-4 REV, 379-5 REV, and 379-6 REV for utility corridor routing.
TG13.1- 017	3/25/2015	E1-2602, L1-1602	Confirm that the intent of the Utility Corridor Routing is meant to run through the CMU foundation of the Amphitheater Stairs.	Confirmed. Refer to sketches attached to Q&A TG13.1-016.
TG13.1- 018	3/25/2015	A1-2903, L1-5603, P1-2603, A1-2913, L1-2623, L1-4603	At GL 6.3 / D there are roof drains indicated on A1-2903, L1-5603, P1-2603, but not on A1-2913, L1-2623, L1-4603. Clarify if there are roof drains at GL 6.3 / D and if a Precast Concrete Roof Drain Enclosure is required for this location. Confirm that the Precast Concrete Roof Drain Enclosure will not conflict with the Restaurant.	A precast concrete roof drain enclosure is not required at the location indicated in the QBD. Roof drains at grid lines 6.3 / D have been removed. Please refer to the attached sketches: SKLA-386, SKP1-2503, SKP1-2603 and SKP1-5010.

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TG13.1- 019	3/25/2015	A1-2913, P1-2603, L1-3603, L1-4603	At GL 7.8 A1-2913 shows four openings in the protection slab with the slab sloping towards these openings which appear to be drains. P1-2603 shows four ghosted squares, but no roof drains in that location. L1-3603 and L1-4603 show two surface drains, with finish grade sloping toward the two drains and the effluent routing to the roof drains on GL 8.5. Confirm that there are two drains as shown on L1-3603 and L1-4603 and not four as indicated on A1-2913. Provide updated coordinated sheets showing either two or four drains.	Please refer to updated drain penetrations per attached sketches SKP1-2503, SKP1-2603, SKA-4575 and SKA-4579. Landscape drawings are correct as shown, indicating only the two surface drains. For slab penetrations, refer to Architectural and Plumbing drawings. Four drains at the main slab are correct as shown on the protection slab drawings. Surface area drains will not be shown on plumbing drawings.
TG13.1- 020	3/25/2015	L1-1603, E1-2603	The Electrical Drawings say to provide vaults per the Landscape Drawings. The Utility Vaults on E1-2603 at GL 6.5 / F.7 are not shown on L1-1603. The Utility Vaults on L1-1607 at GL 8.7 / E are not shown on E1-2603. Clarify which sheet is correct and please provide updated details.	Please refer to SKLA 379 series attached to Q&A TG13.1-016 for utility vaults locations.
TG13.1- 021	3/25/2015	E1-2606, L1-1606	There is a conflict between the Utility Corridor Routing on E1-2606 and L1-1606. Which routing is correct and should be priced?	Please refer to SKLA 379 series attached to Q&A TG13.1-016 for utility corridor routing.
TG13.1- 022	3/25/2015	E1-2607, L1-1607	There is a conflict between the Utility Corridor Routing on E1-2607 and L1-1607. Which routing is correct and should be priced?	Please refer to SKLA 379 series attached to Q&A TG13.1-016 for utility corridor routing.
TG13.1- 023	3/25/2015	L1-6623, L1-6626, L1-9680, L1-9681	Define the type of plant required on the East and West Mounds. L1-9680 shows ta on the detail, but there is no ta in the Shrubs and Perennials Schedule. L1-9681 only shows black dots.	The planting required on the east and west mounds is Trachelospermum Asiaticum, identified as "GC-TA" on sheets L1-6623 and L1-6626, and identified on the planting legend sheet L-0009. Please refer to SKLA 385.1, 385.2, 385.3 and 385.4.
TG13.1- 024	3/25/2015	L1-1605, L1-1606	Provide details for Utility Vaults within the Bamboo Grove Basins.	Please refer to attached SKLA 387 for the utility vault within the bamboo basins.
TG13.1- 025	3/25/2015	L1-4606	The Stair 601 area drain in paving at GL 30.3 / F shows an invert elevation of 84.09 which is higher than the drain lines flowing to it. Confirm if this is in fact the correct elevation. If this is incorrect, provide the correct elevation and update the detail.	The invert elevation at the stair 601 area drain was omitted as shown on attached SKLA 384-1. Please refer to architectural and plumbing details for the drainage.
TG13.1- 026	3/25/2015	L1-4606	Clarify where the Stair 601 area drain at GL 30.3 / F drains go to. It does not appear to drain to a roof drain. Where is the plumbing connection?	Provide an area drain at the main roof slab level below Stair 601 landing. Provide drain piping for the area drain at landing and other drain lines connected to the area drain piping shown on drawing L1-4606. Please refer to attached sketches SKP1-SKP1-2506, SKP1-2606 and SKA-4578.

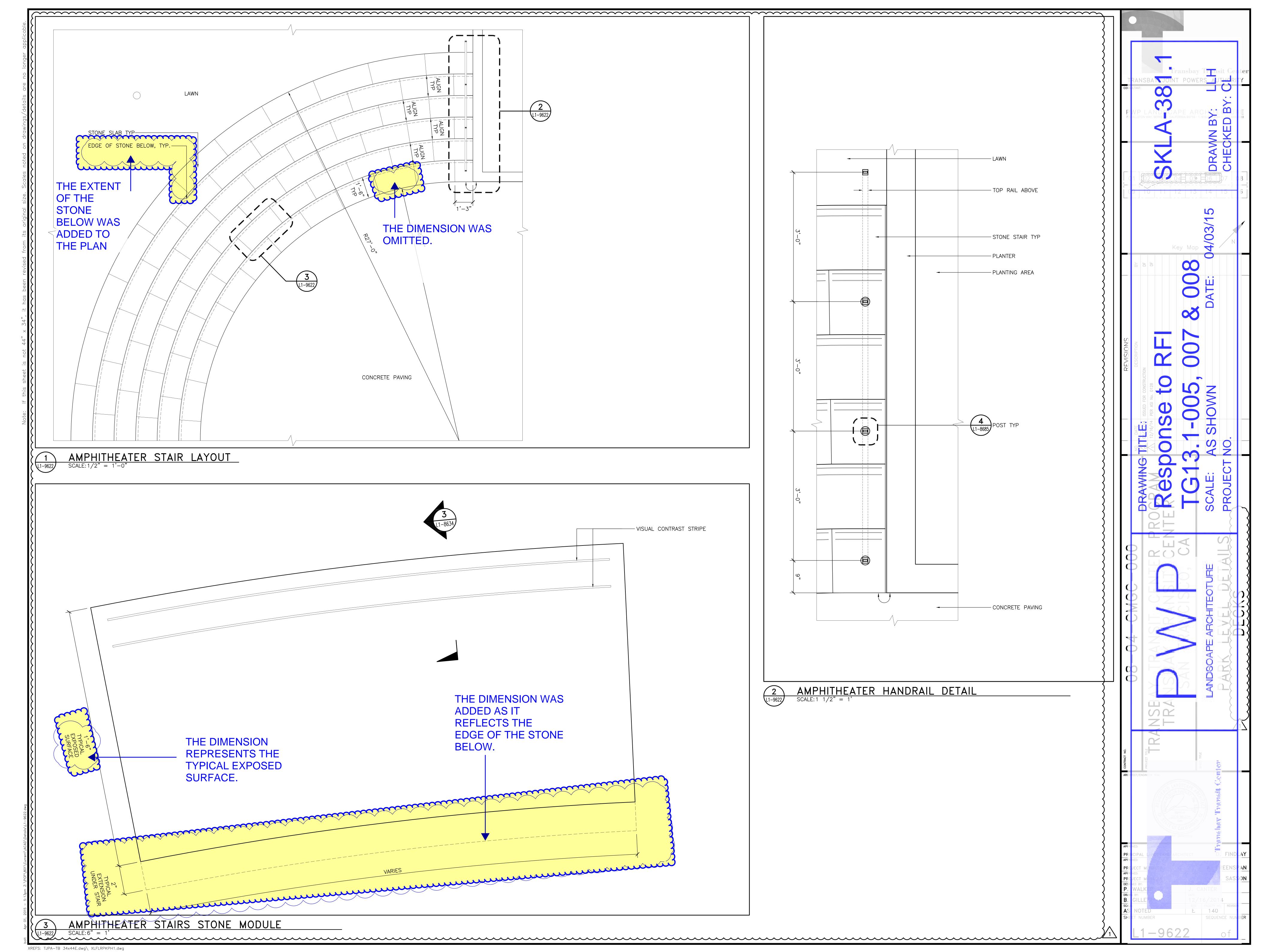
TG13.1- 028	3/25/2015	L1-8621, 32 14 41	Specification 32 14 41, section 2.3.C and 2.3.D refer to two stone types and sizes for the Flush Stone Header Units and the Stone Curb and Garden Headers. 32 14 41, 2.3.C.1 and 2.3.D.1 refer to the table in paragraph 3.7 for a schedule of sizes and finishes. The sizes of sandstone in 32 14 41, 3.7 are larger in size than the other specified materials in 32 14 41, 2.3.C.2 and 2.3.D.2. It also appears that the material specified in 32 14 41, 2.3.C.2 and 2.3.D.2 corresponds to the details in the drawings, as shown on L1-8621. The stone size specified in 32 14 41, 2.3.C.1 and 2.3.D.1 are not shown in the drawings. Clarify which type of stone and size is meant to be installed.	Provide Stone Header units per 2.3.C.2. Provide Stone Curb and Garden Header per 2.3.D.2.
TG13.1- 029	3/25/2015	32 14 41, 3.7	Specification 32 14 41, 3.7 states to refer to the drawings for shape and dimensions of Stone Header W1, W2, W3, W4 and W5. Stone Header W1, W2, W3, W4 and W5 are not shown in the drawings. Please provide details for W1, W2, W3, W4, and W5.	Refer to the response to Q&A TG13.1-028-0 for clarification. 32 14 41, 3.7 does not apply.
TG13.1- 032	3/27/2015	L1-6603 thru L1- 6607	Sheet L1-6603 thru L1-6607 show vine planting at the Green Screen locations but they do not provide a species and/or plant size. Please clarify.	Refer to sheet L0006 for species and size.
TG13.1- 033	3/27/2015	L-0006 - L-0007	On sheet L-0006 and L0007 - Tree Planting Schedule - Please clarify if the following tree sizes are to be per the 'container' size call out or the Abbreviated callout. AC60 - Aesculus Californica and/or container size 48" box tree. QT60 - Quercus Tomentella and/or container size 36" box tree. LA36 - Leucadendron Argenteum and/or container size 24" box tree.	As indicated in the construction documents: AC60=48" box OT60=36" box LA36=24" box
TG13.1- 034	3/27/2015	L1-6605	Per sheet L1-6605, there is a tree called out 'HF48', but there is no HF48 tree called out on the tree planting legend on sheets L-0006 and L-0007. Please clarify this tree type and size.	'HF 48' should be 'HM48'. Please refer to the attached SKLA 390.1 for the tree type clarification.

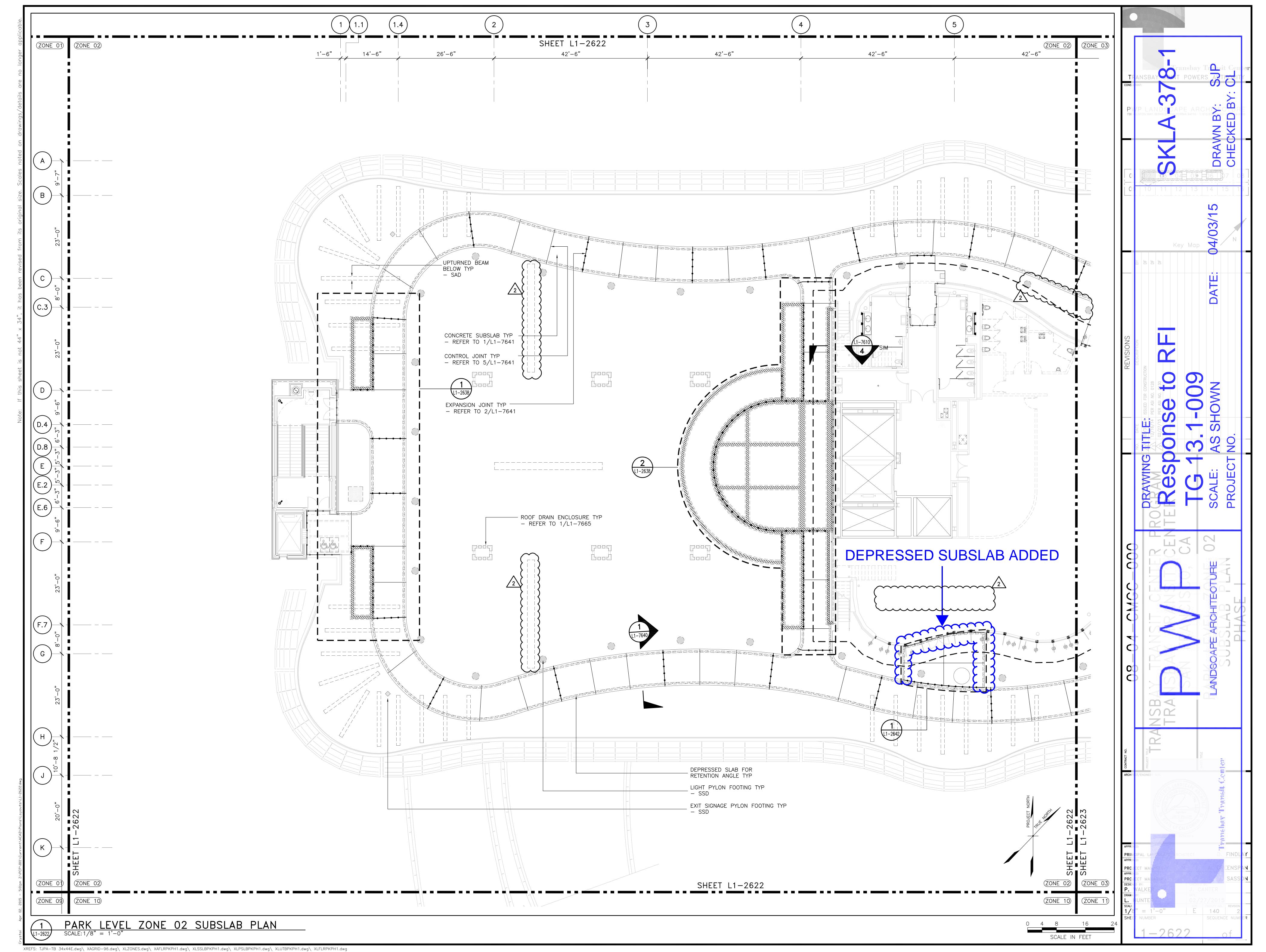
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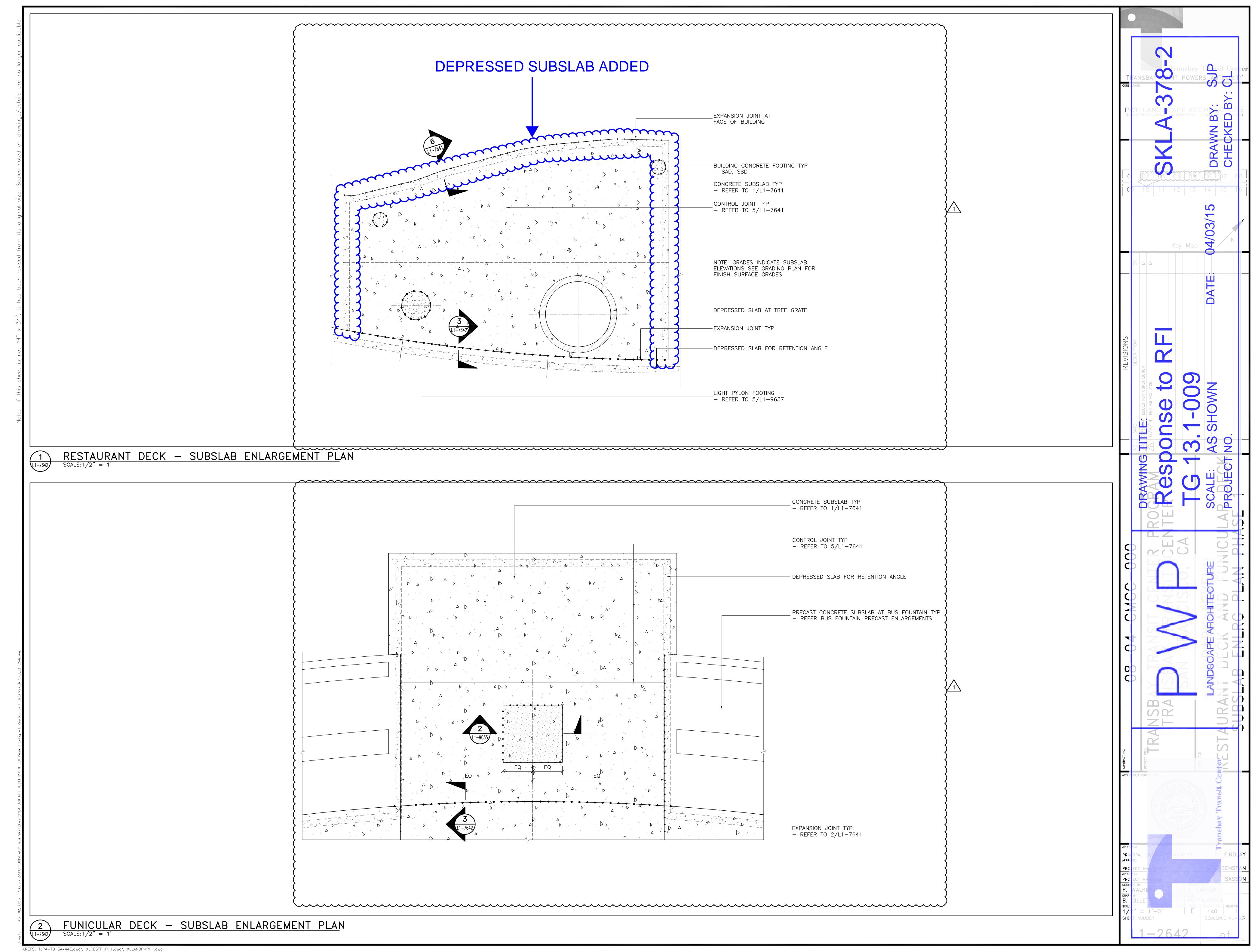
TG13.1- 036	4/2/2015	32 15 00 2.1 Materials A and B, L1-2603 and L1- 2606		We are requesting clarification as to the depth of Aggregate Mulch Type 1 to be installed at the Elliptical Planter areas shown on Plan Sheets L1-2603 and L1-2606.	See response to Q&A TG13.1-037.
TG13.1- 037	4/2/2015	32 15 00 2.1 Materials A and B, L1-2605		We are requesting clarification as to the depth of Aggregate Mulch Type 1 to be installed in Circular Planter Area at Grid Line 15 and between Grid Lines D and F.	Provide 3" depth for Aggregate Mulch Type 1 at these locations.
TG13.1- 038	4/2/2015	03 33 12 and 04 22 00, L1- 2638 Detail 1		On Sheet L1-2638 there is a callout for "CMU Footing Below" and "CMU Wall Below" at the 4 Great Lawn Planters. In reviewing the referenced Details 2, 3 and 4 on Sheet L1-7681, and Detail 2 on Sheet L1-7682, there are no CMU Footings or CMU Wall shown to be installed at the Great Lawn Planters on Concrete. Please clarify.	Omit reference to "CMU WALL BELOW" and "CMU FOOTING BELOW" as shown on the attached SKLA 391.1. Please refer to 2/L1-7683 for typical detail.
TG13.1- 039	4/2/2015	33 41 19, L1-4605		At Grid Line 21 and between Grid lines C & D and Grid Lines F & G there is 4" perforated pipe shown that terminates without any type of Area Drain or Cleanout. Please clarify if any Area Drain or Cleanout is required.	Provide cleanouts as indicated on the attached SKLA 392.1.
TG13.1- 040	4/2/2015	33 41 19 2.2. G. Dual Cleanout, L-0005 Legend		In the General Park Level Grading and Drainage Plans Legend there is a Duel Cleanout - Buried Lid and Duel Cleanout - Drain Grate Lid listed. In reviewing the Park Level Details Drainage on Sheets L1-9650 through L1-9652 there is no Detail for any type of Cleanout. Please provide.	Please refer to the attached SKLA 393.1 and 393.2 for the dual cleanout details.
TG13.1- 042	4/2/2015	L-0006		Per Plan sheet L-0006, the irrigation legend calls for a controller A and a booster pump Assembly, but these items cannot be located on the plans, please clarify where they are located and/or if they are required.	The irrigation items are shown in the ground level plan. Please refer to sheet L1-6322 and L1-6323. TG13.1 Roof Park Landscaping and Irrigation does not include ground level landscaping.
TG13.1- 045	4/2/2015		Long Form Subcontract	We are requesting clarification as to whether there are or are not Liquidated Damages associated with Trade Package #TG13.1 Roof Park Landscaping and Irrigation Package. If Liquidated Damages are required for Trade Package #TG13.1, then please identify the Amount of Liquidated Damages and whether it is assessed per Calendar Days or Working Days.	Liquidated Damages are part of the TG13.1 Trade Subcontractor's Contract. See Specification Section 00 05 20 section 4.02 Liquidated Damages, Specification Section 00 07 00 section 7.02 Liquidated Damages, and Specification Section 00 08 20 section 1.8 Liquidated Damages.

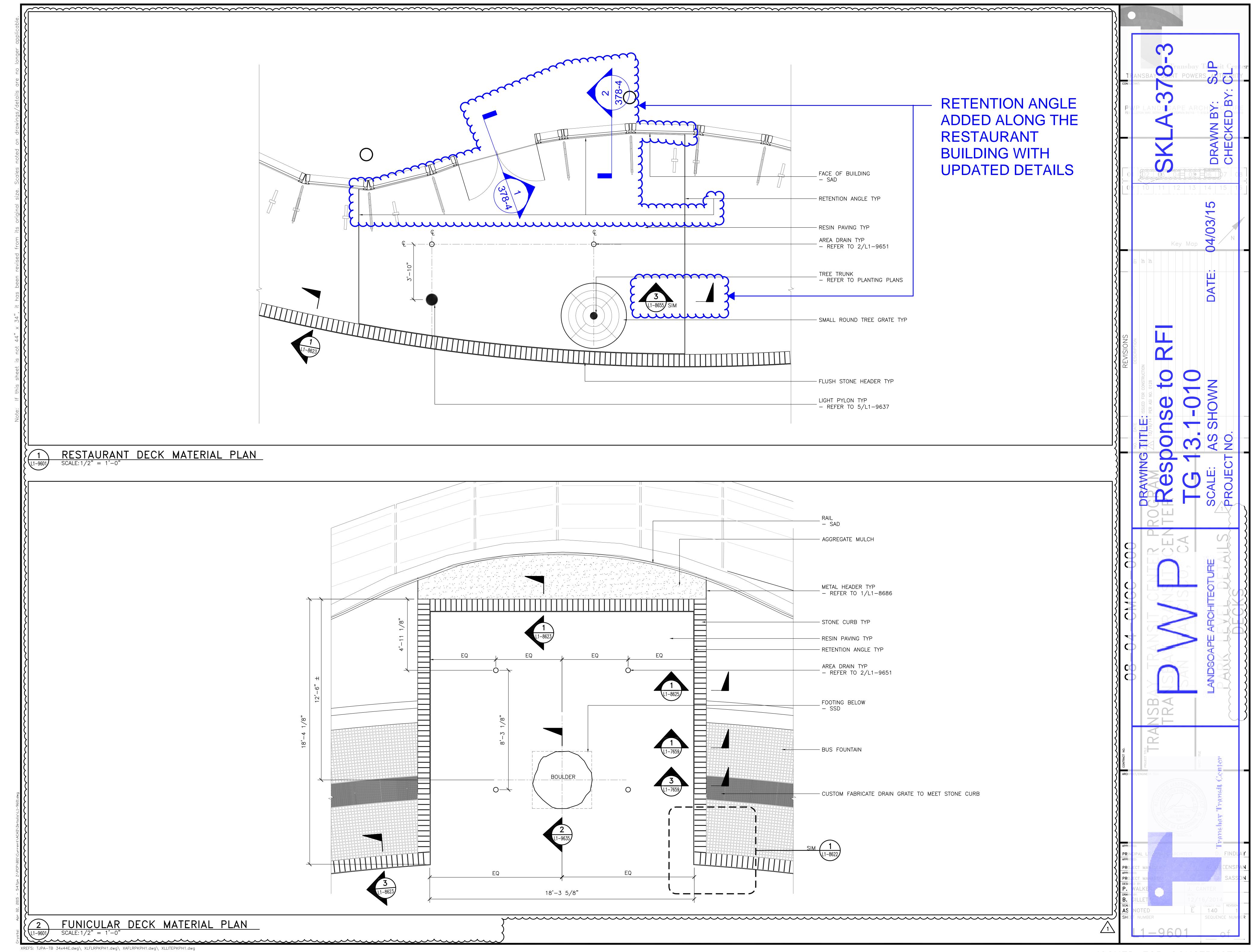
TG13.1- 046	4/2/2015		Exhibit A- TG13.1, Section II. Key Dates	We are requesting clarification if should there be an extension of the Bid Date, as previously requested, will there be a new date established for submitting Questions on Bid Documents (QBD)?	See TG13.1 Exhibit A Addendum #2 issued on 4/8/2015; the bid due date is now June 30 and QBDs are due June 9.
TG13.1- 049	4/2/2015	32 14 40 2.3 Materials Items A and B 1 on Both Sheets, L1-2632 and L1- 2633		We are requesting clarification as to which type of Cobblestone Pavers are to be used per the Specification Section 32 14 40 Sand-Set Stone Paving; Part 2-Products 2.3 Materials A. Black Cobblestone Pavers: 2. Academy Black or 4. Brittania Black B. White Cobblestone Pavers: 2. Sierra White or 4. Gray Salt	Refer to response to Q&A TG13.1-031.
TG13.1- 051	4/2/2015	32 14 41 2.3 Materials Items C 1-Flush Stone Header Layout, L1-8620		We are requesting clarification as to which type of Stone is to be used for the Flush Stone Header Units per the Specification Section 32 14 41 Mortar-Set Stone Paving; Part 2-Products 2.3 Materials Item C. 1. Base Bid: Canyon Gold Sandstone or 2. Siv Yellow Granite	Refer to response to Q&A TG13.1-028.
TG13.1- 052	4/2/2015	32 14 41 2.3 Materials Items D 3-Stone Curb at Bus Fountain 1-Stone Curb at Planting, L1-8623 and L1- 8625		We are requesting clarification as to which type of Stone is to be used for the Stone Curb and Garden per the Specification Section 32 14 41 Mortar-Set Stone Paving; Part 2-Products 2.3 Materials Item D. 1. Canyon Gold Sandstone or 2. Siv Yellow Granite	Refer to response to Q&A TG13.1-028.
TG13.1- 053	4/2/2015			With the complexity of the Roof Park and Landscaping scope can the bid date be extended?	See Q&A TG13.1 Exhibit A Addendum #2 issued on 4/8/2015; the bid due date is now June 30 and QBDs are due June 9.

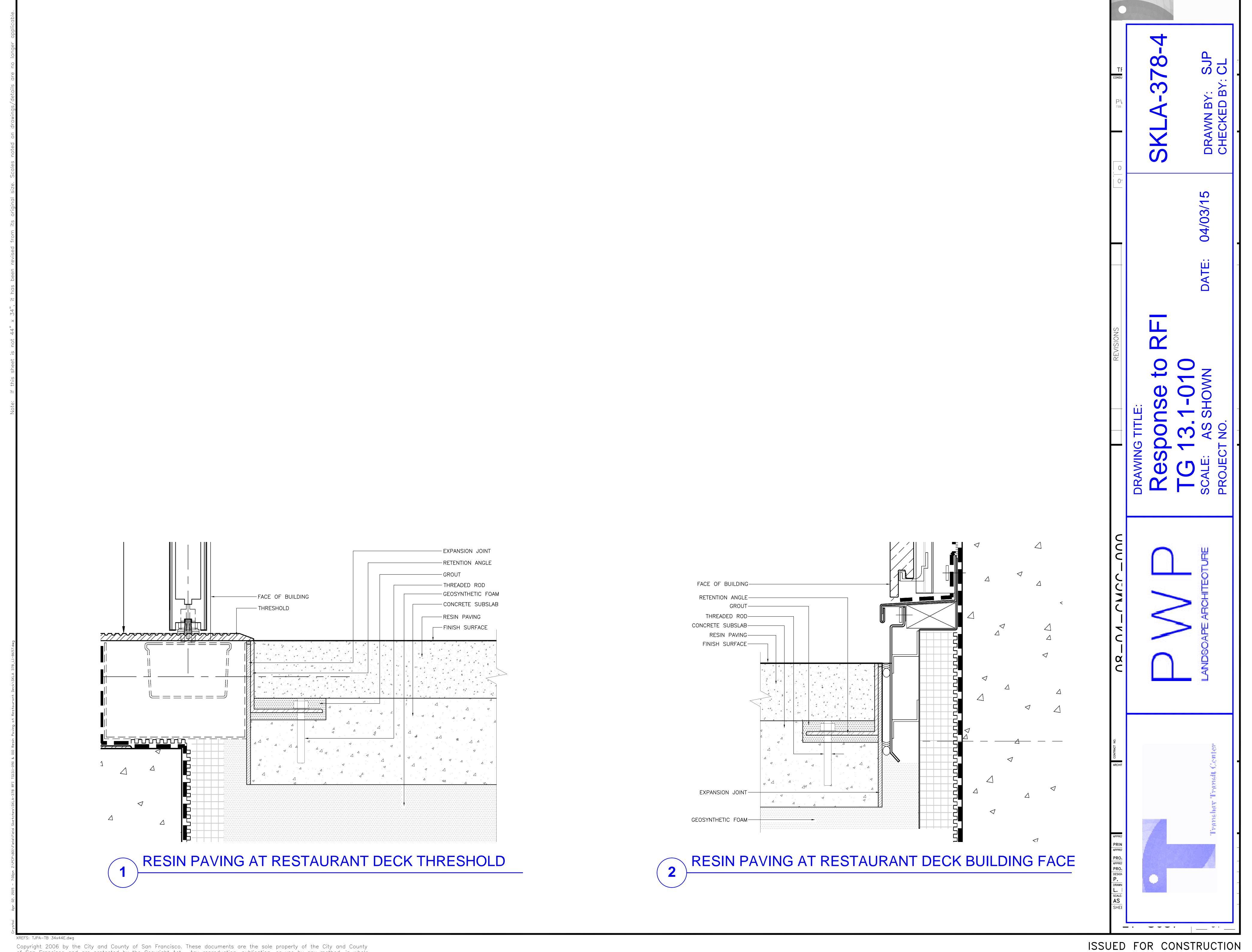
TG13.1-	4/2/2015	33 41 19	Per Specification Section 33 41 19; Part 3-	Use sand for backfill as shown in the detail
058		3.3; Item	Part 3 Execution; 3.3 Solid and Perforated	and refer to attached SKLA 397 for
		E 2-	Pipe installation; Item E. Backfill in Planting	clarification.
		Subdrain	Areas over Perforated Subdrain Pipe; #1	
		and	states "Backfill with drain rock to elevations	
		Perforated	indicated on Drawings"; however, per Detail	
		Pipe, L1-	2-Subdrain and Perforated Pipe on Sheet L1-	
		9666	9666, the perforated pipe is to be backfilled	
			with Sand. Please clarify which material is to	
			be used for backfill, Drain Rock or Sand.	

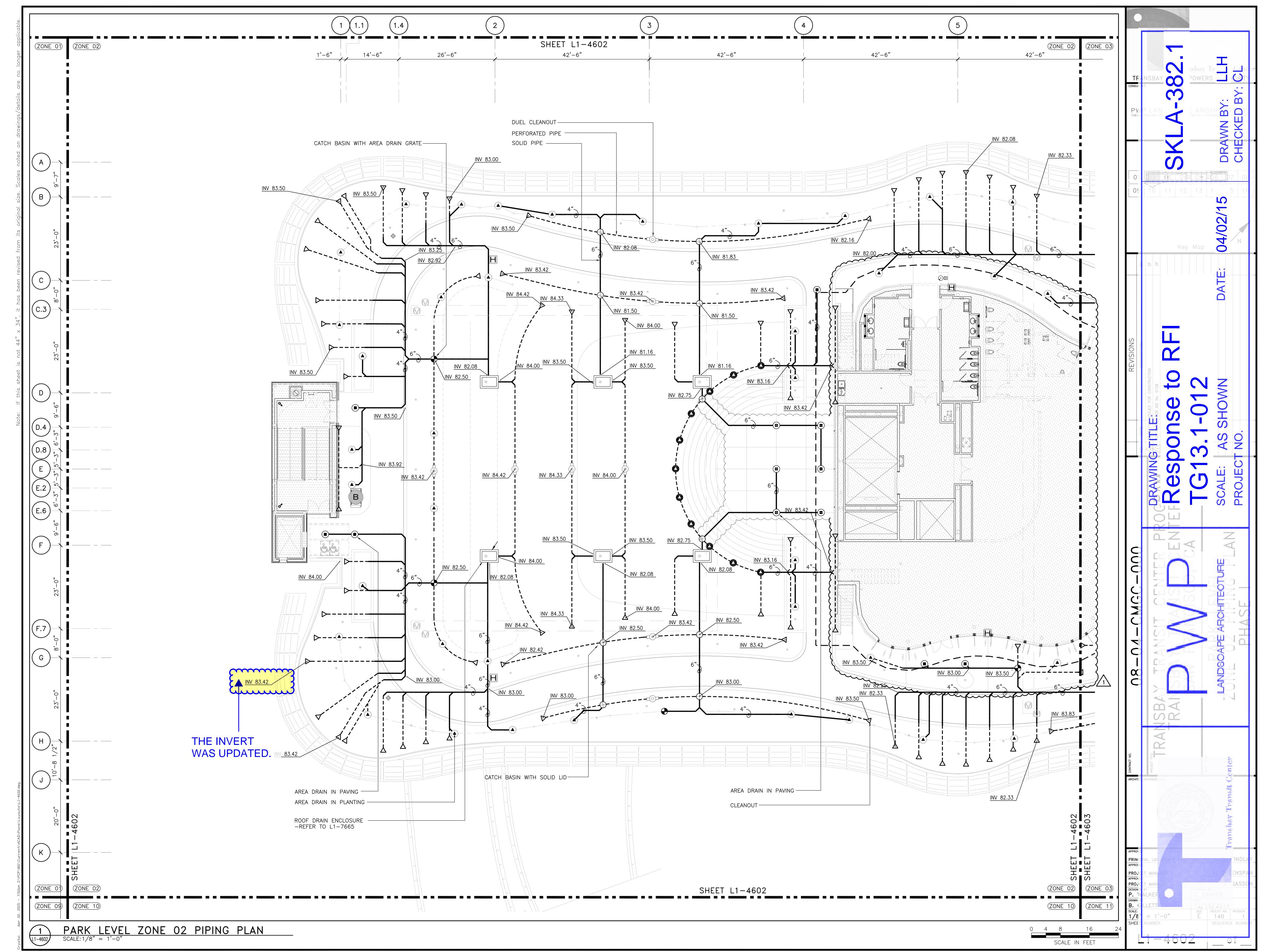


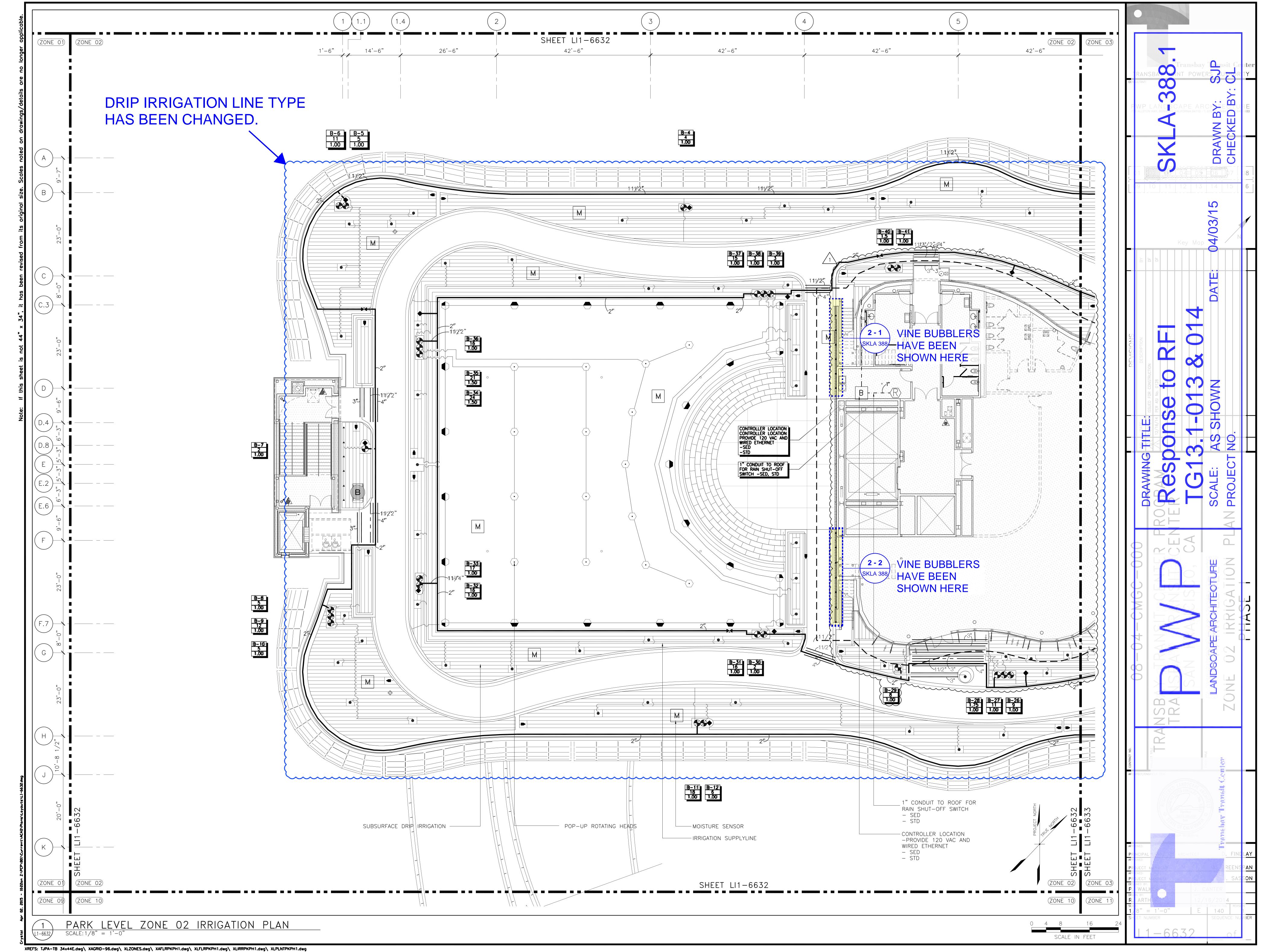


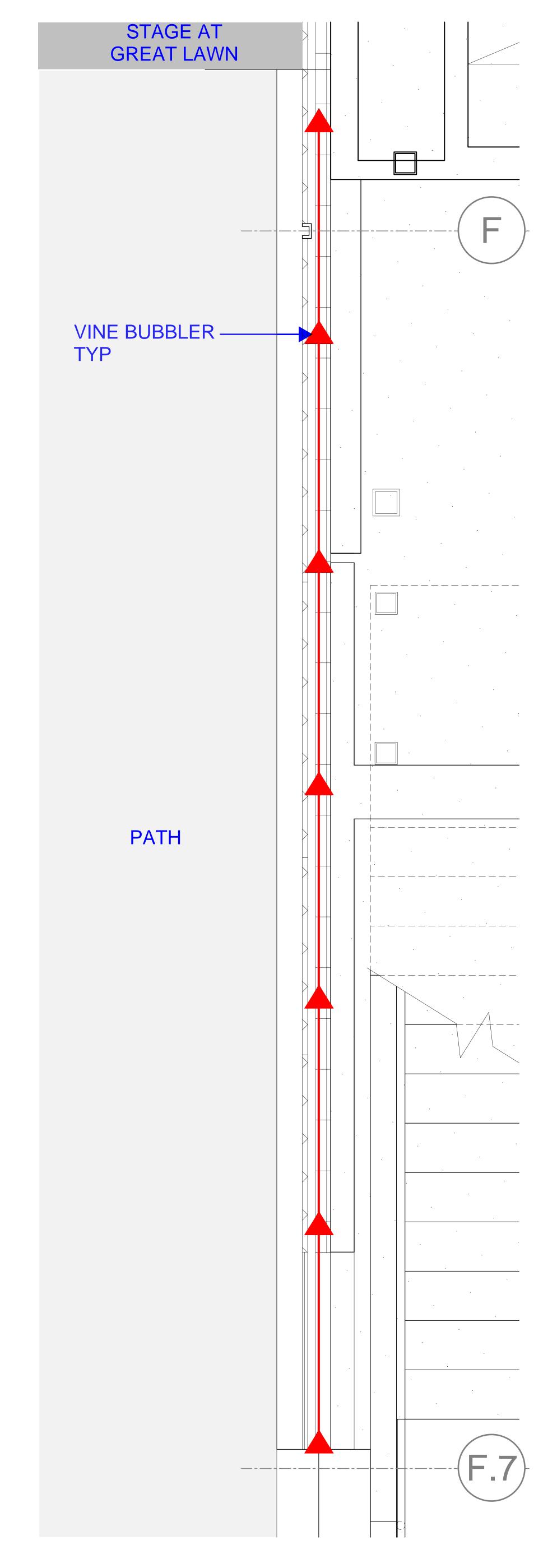








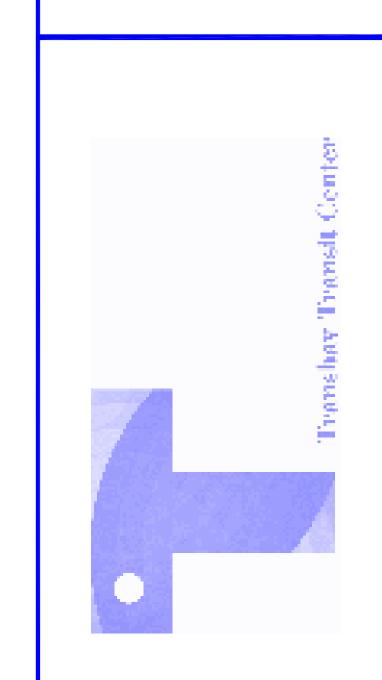




Response to RFI
TG13.1-013 & 014

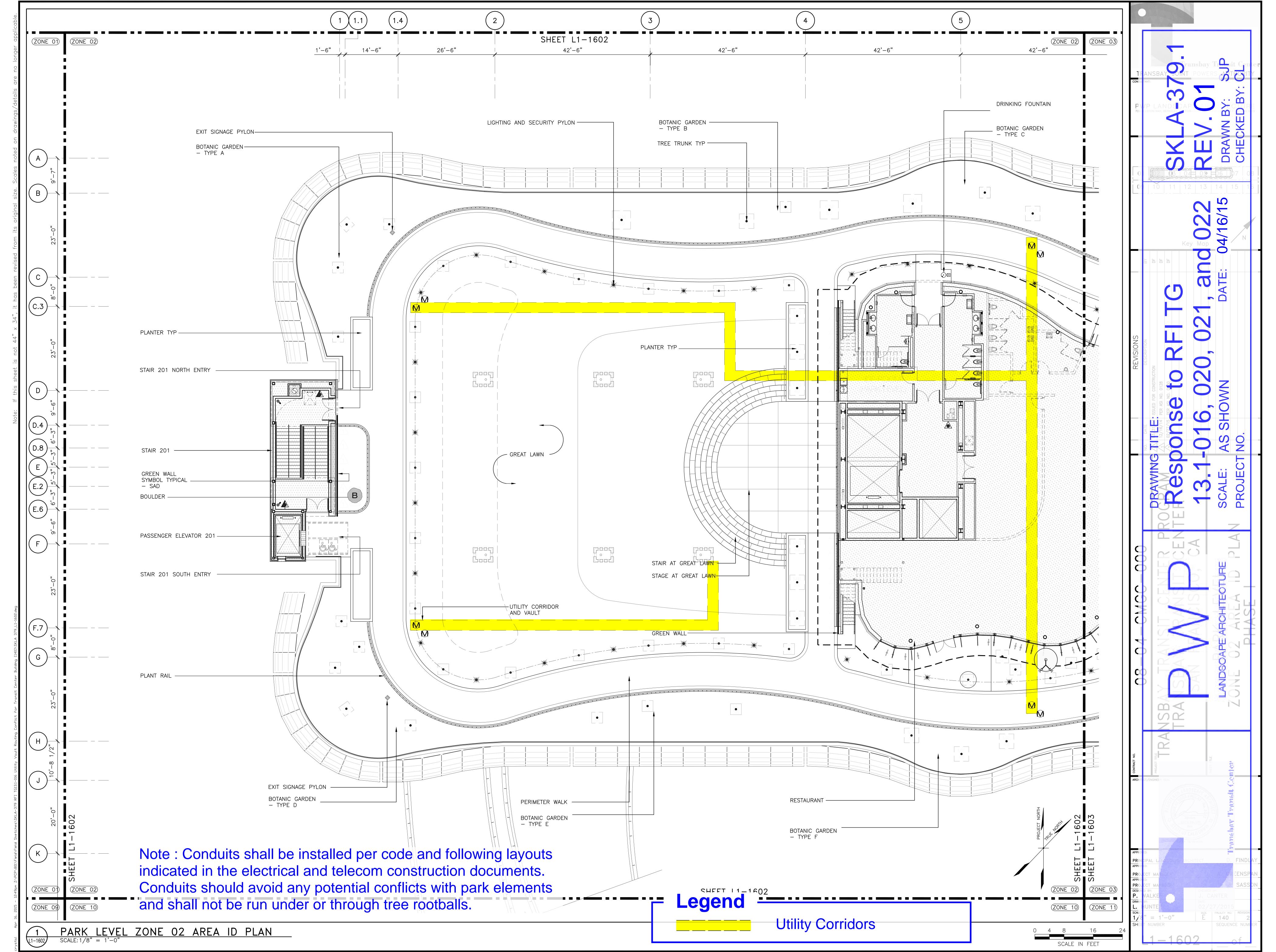
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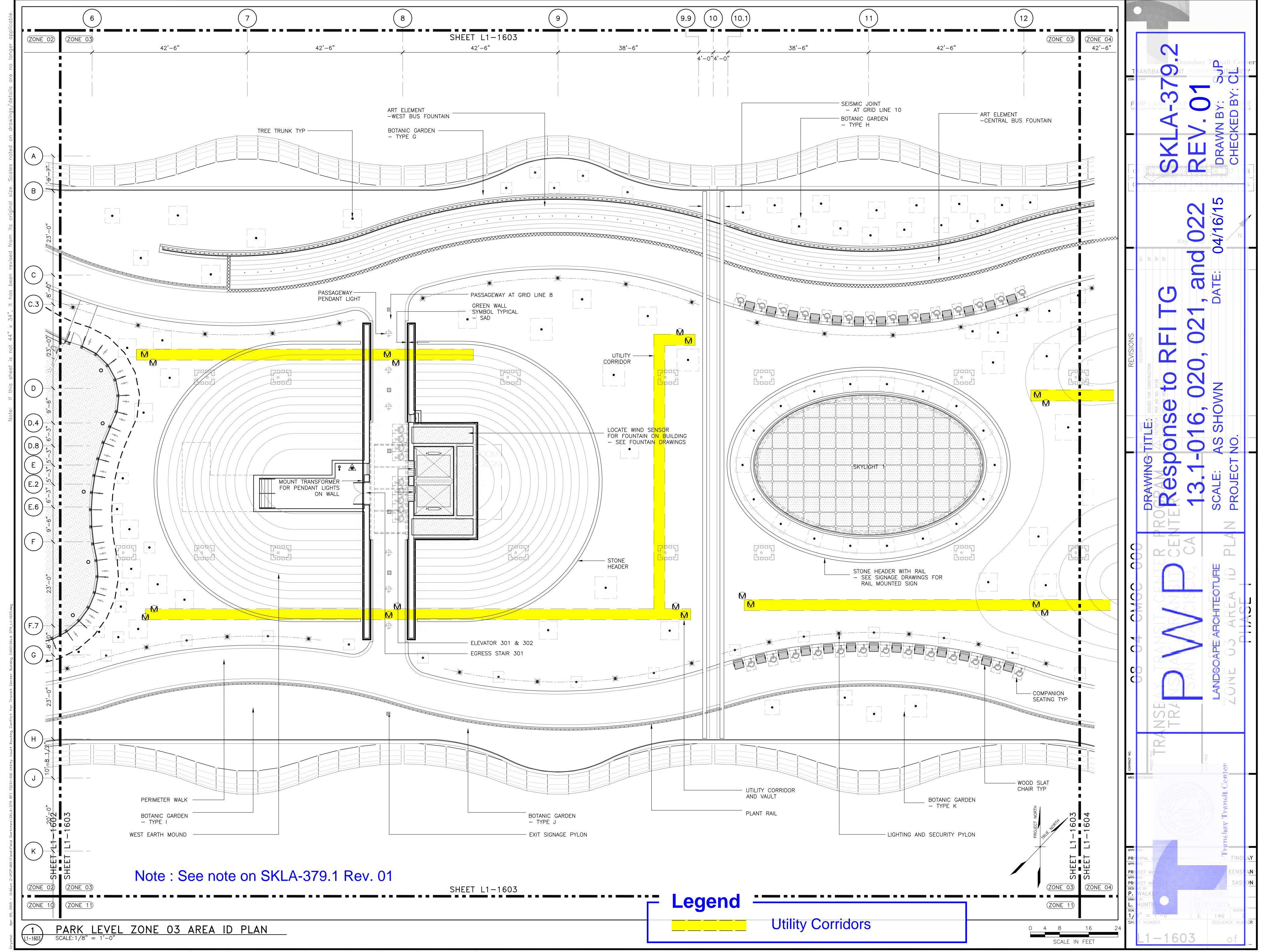
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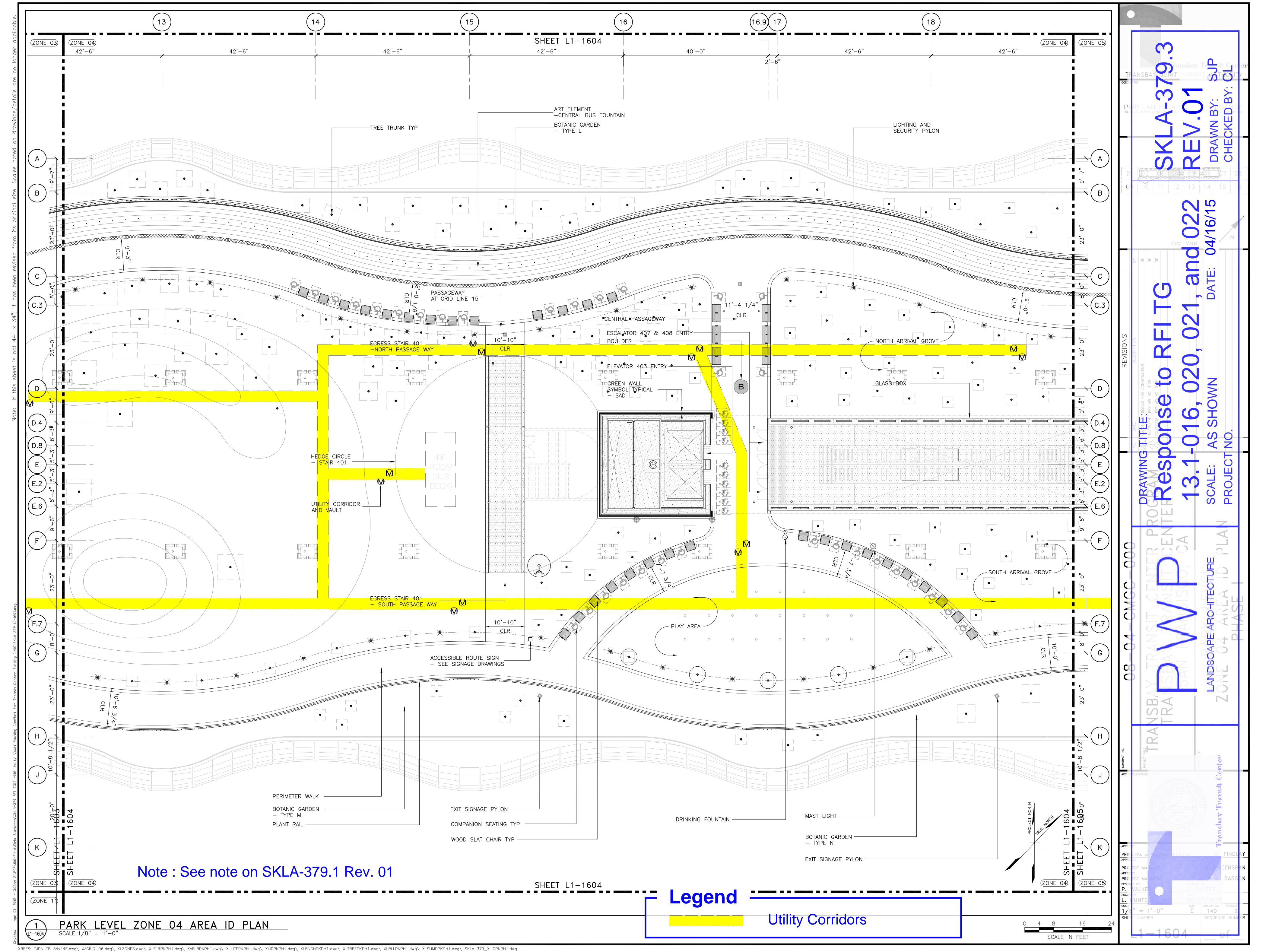


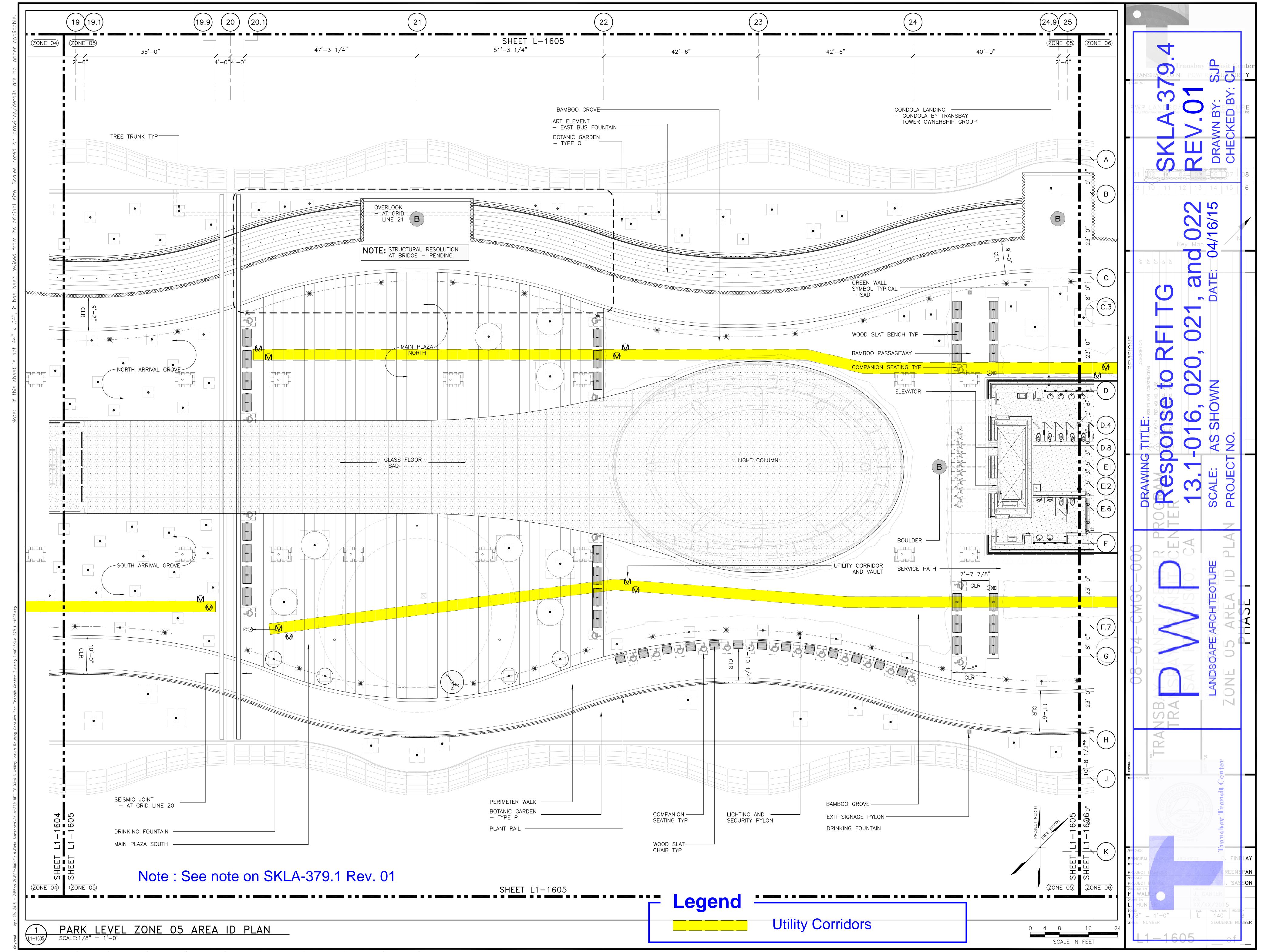
VINE BUBBLERS AT SOUTH VINE PLANTING AREA

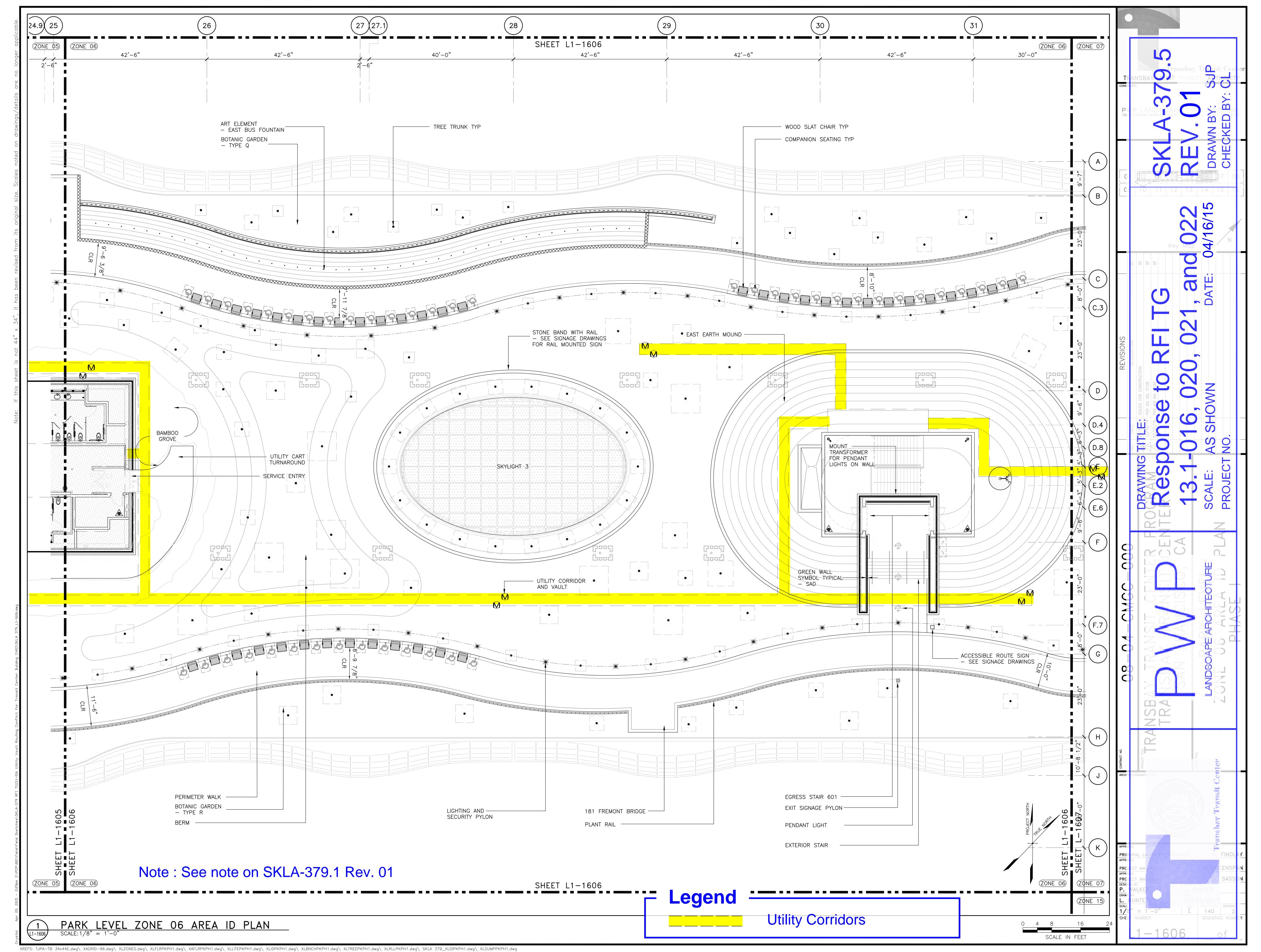
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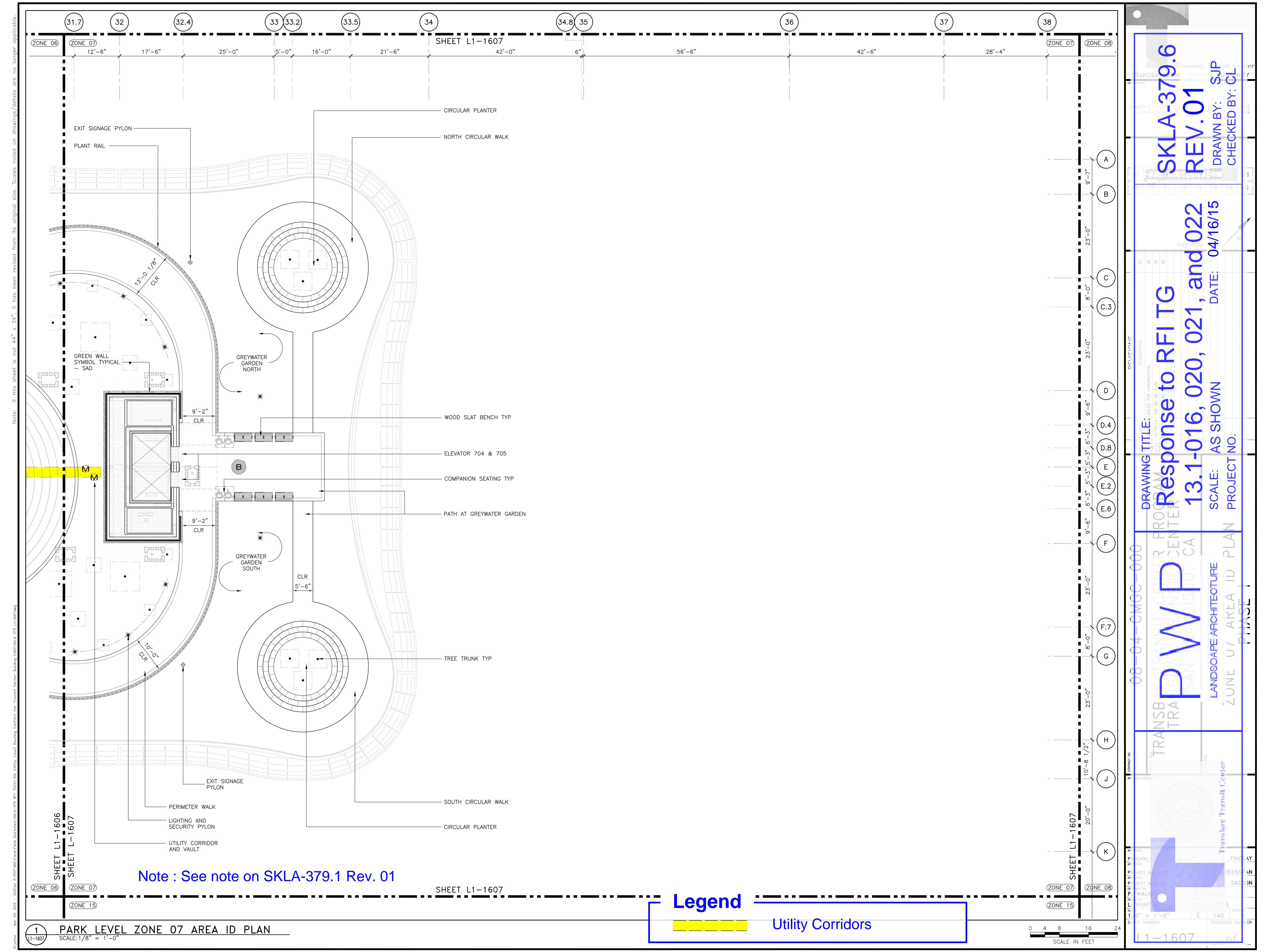


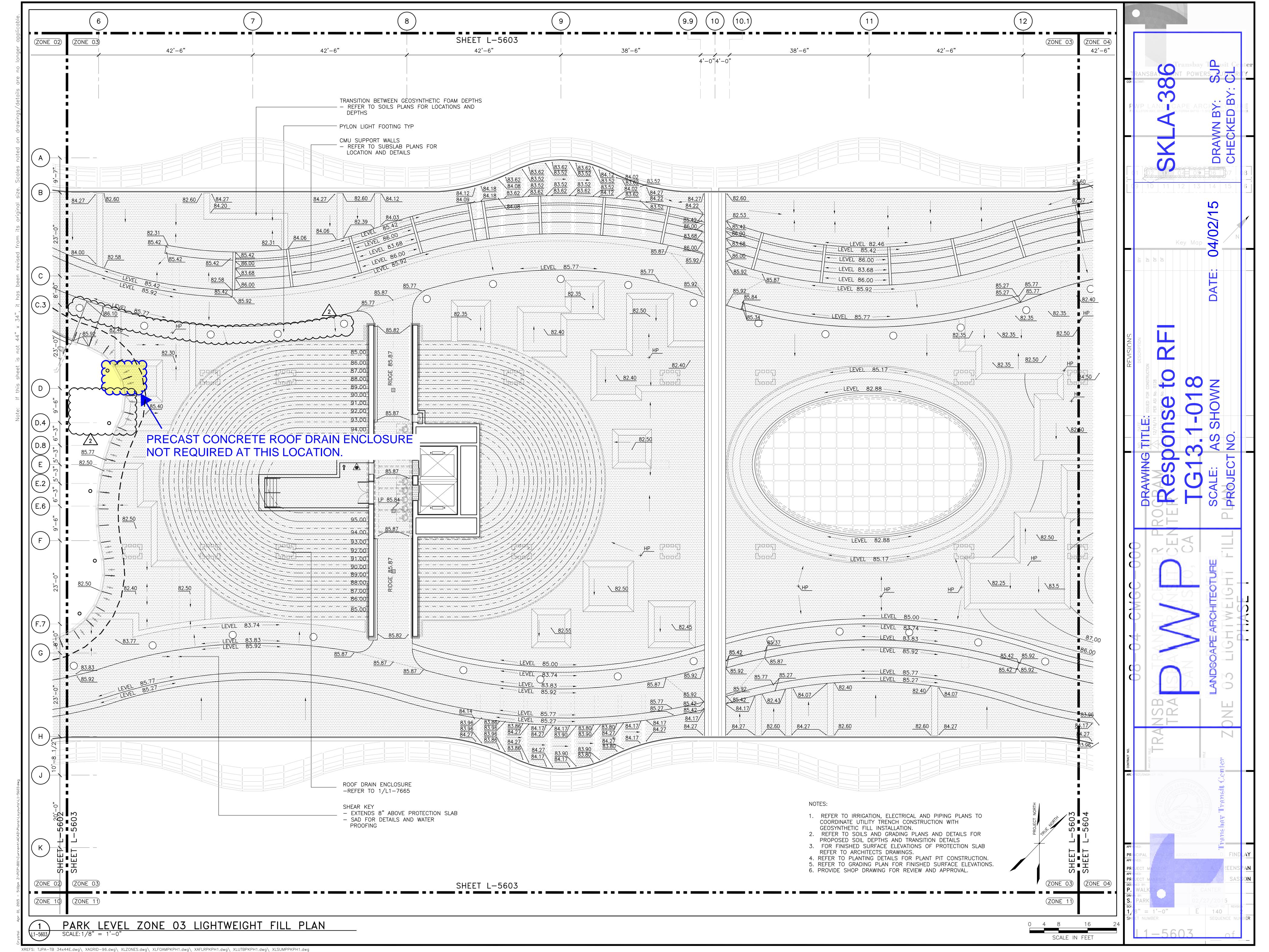


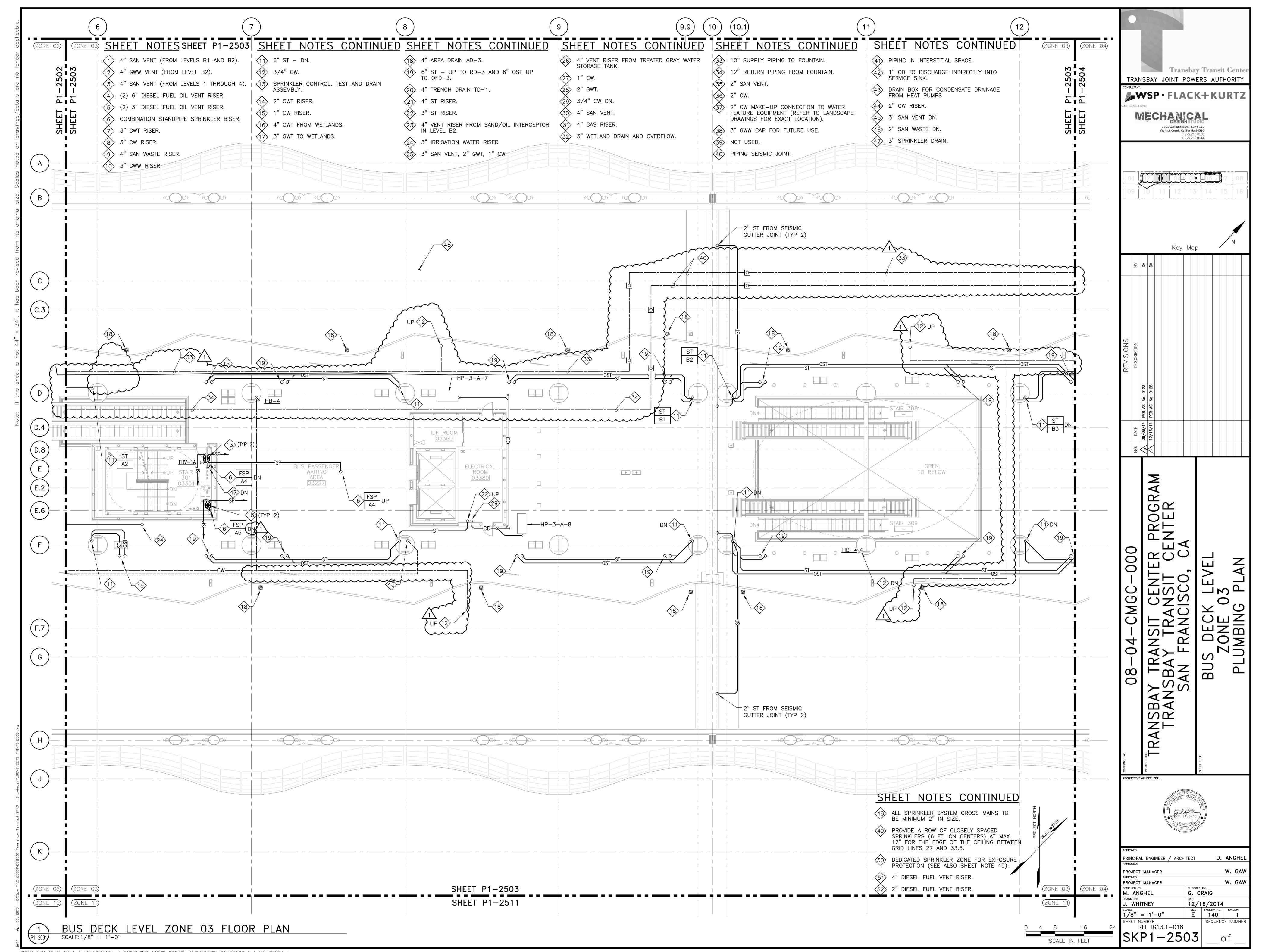


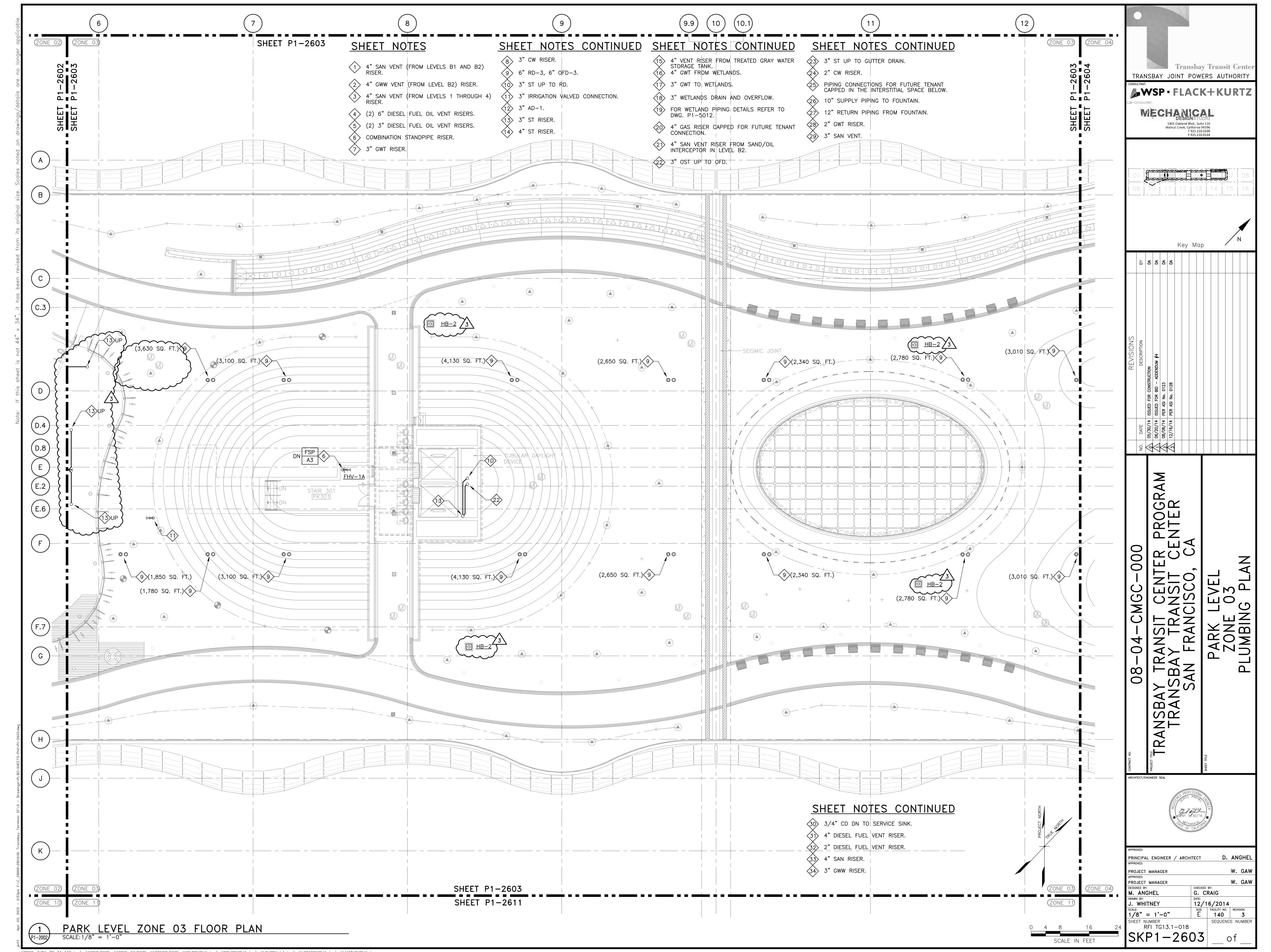


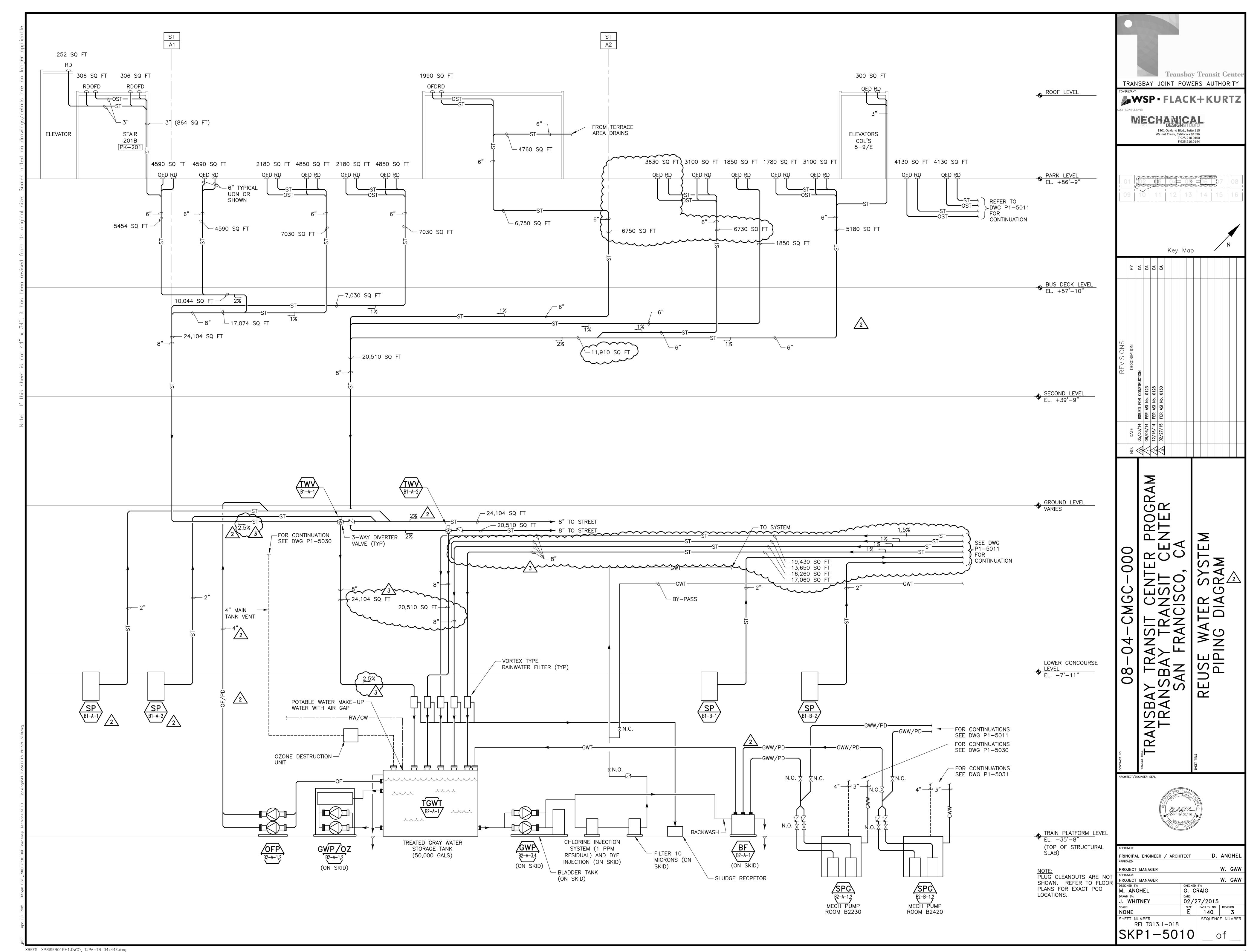


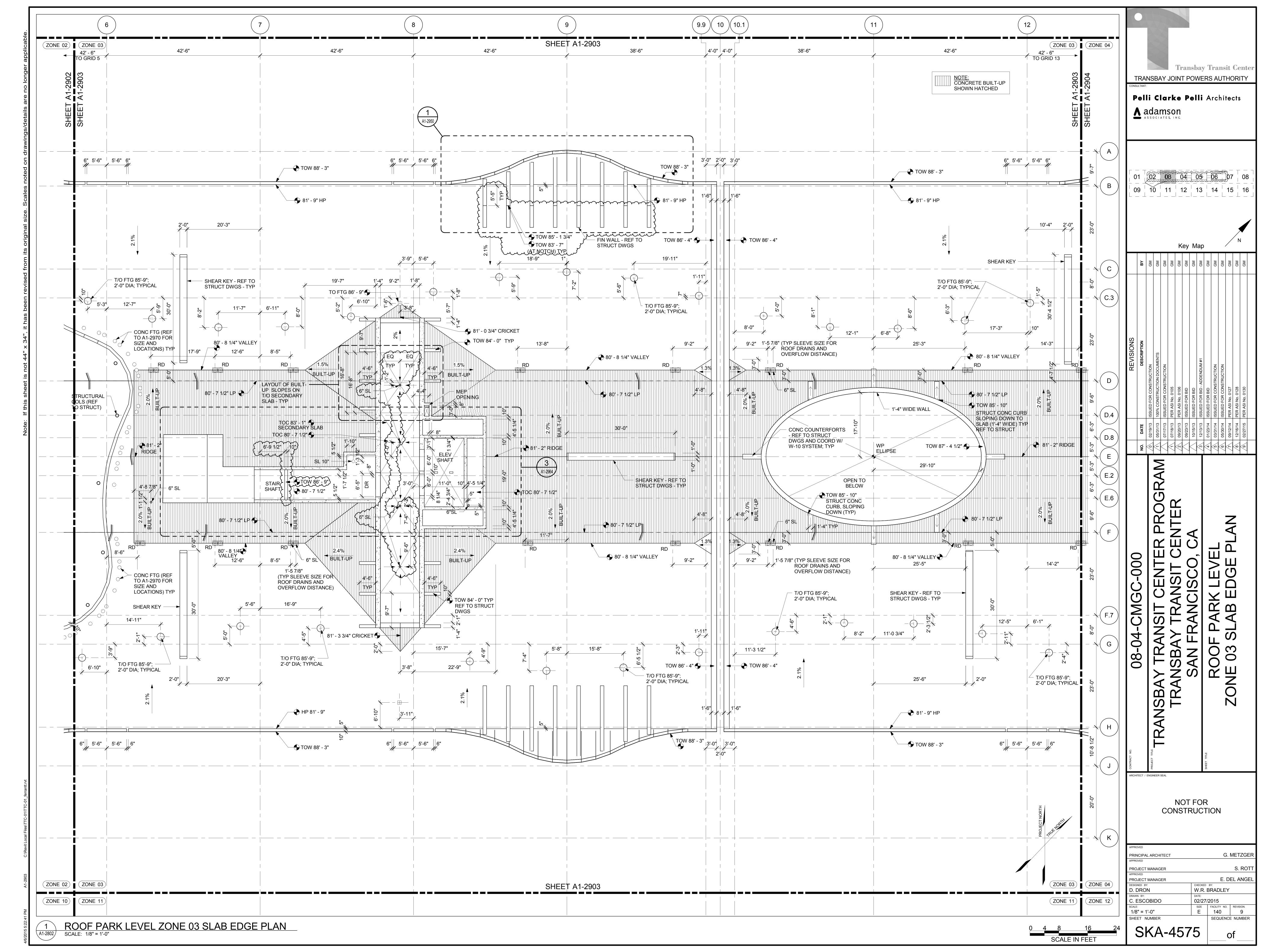


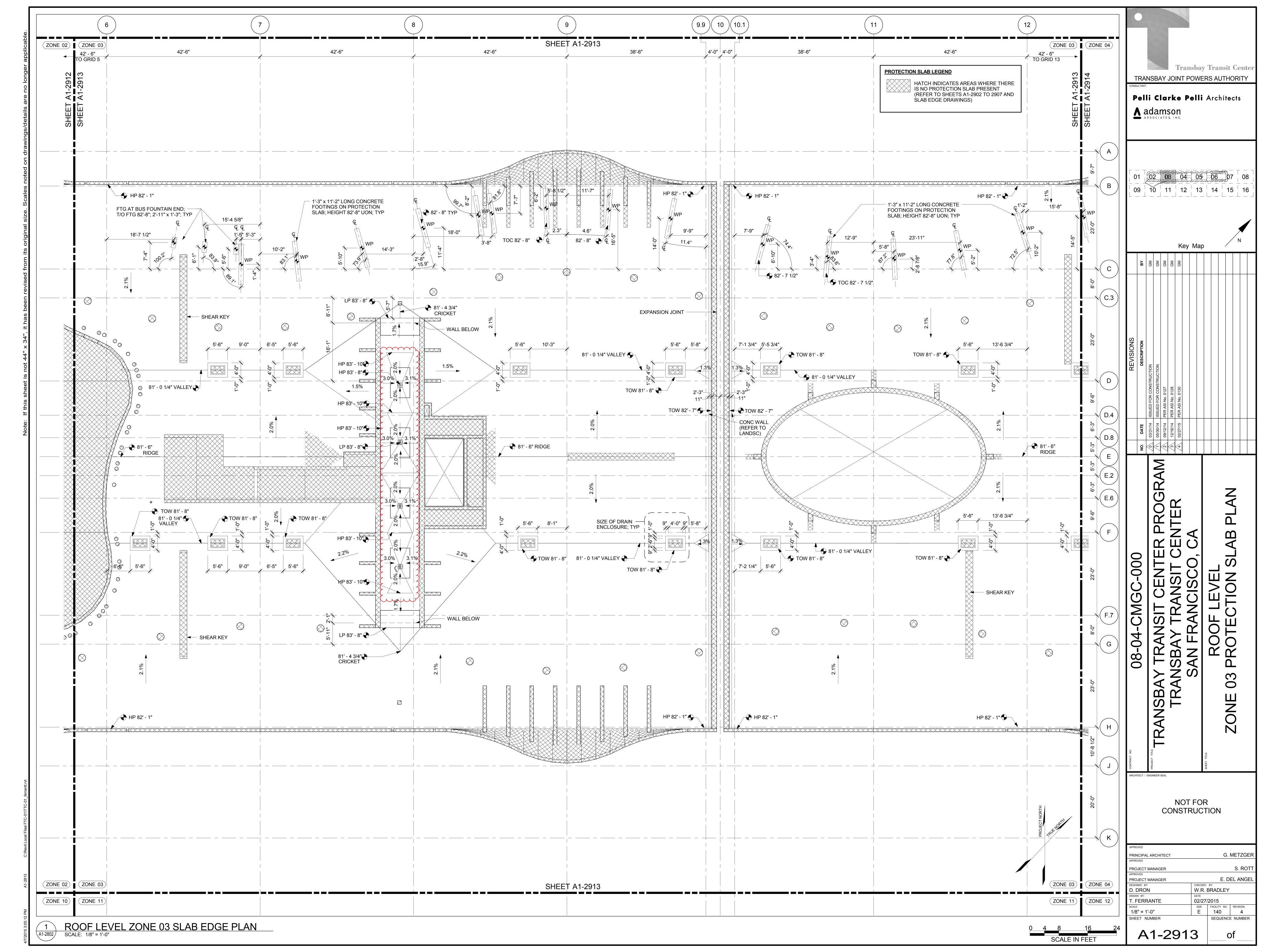


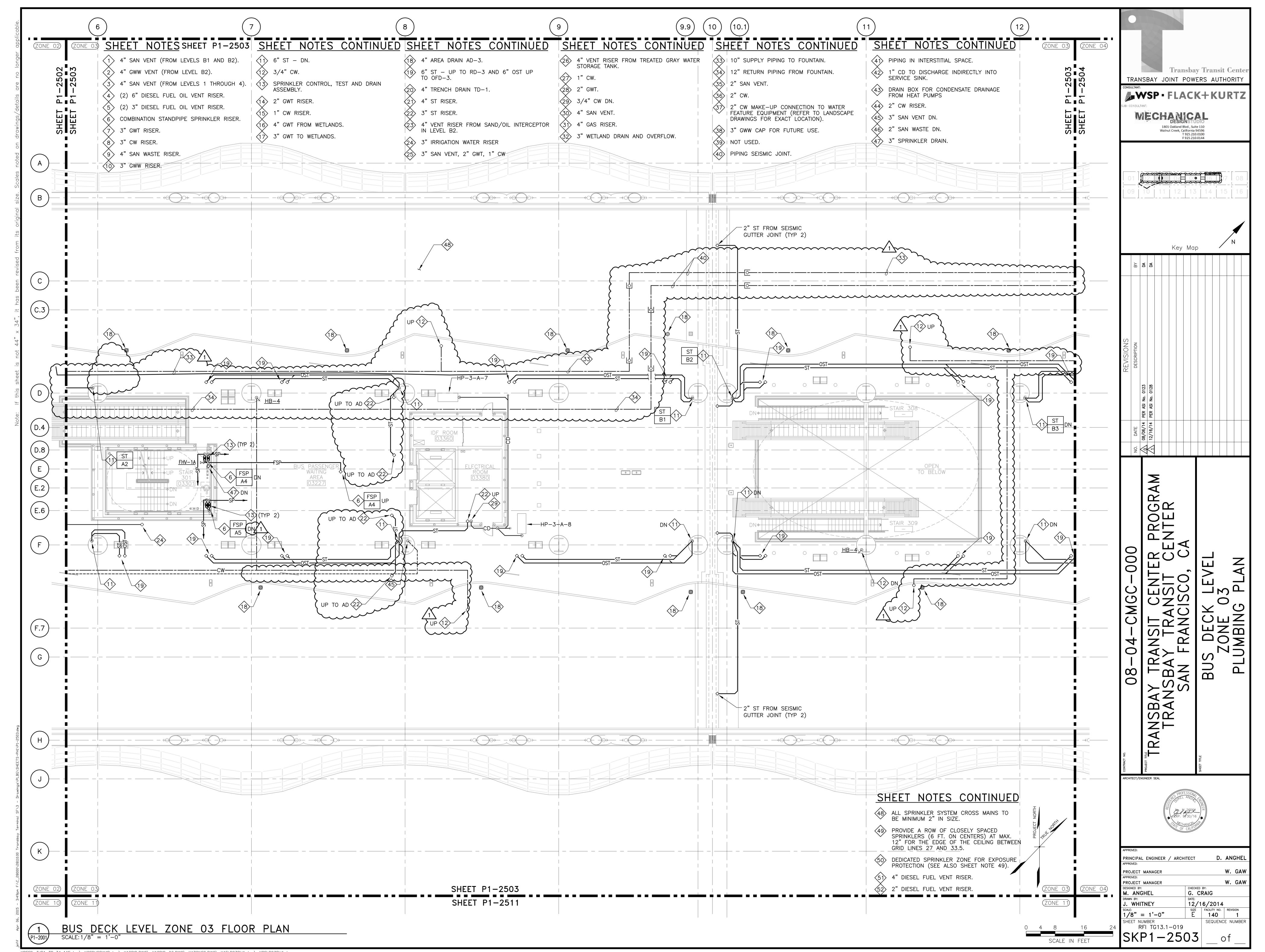


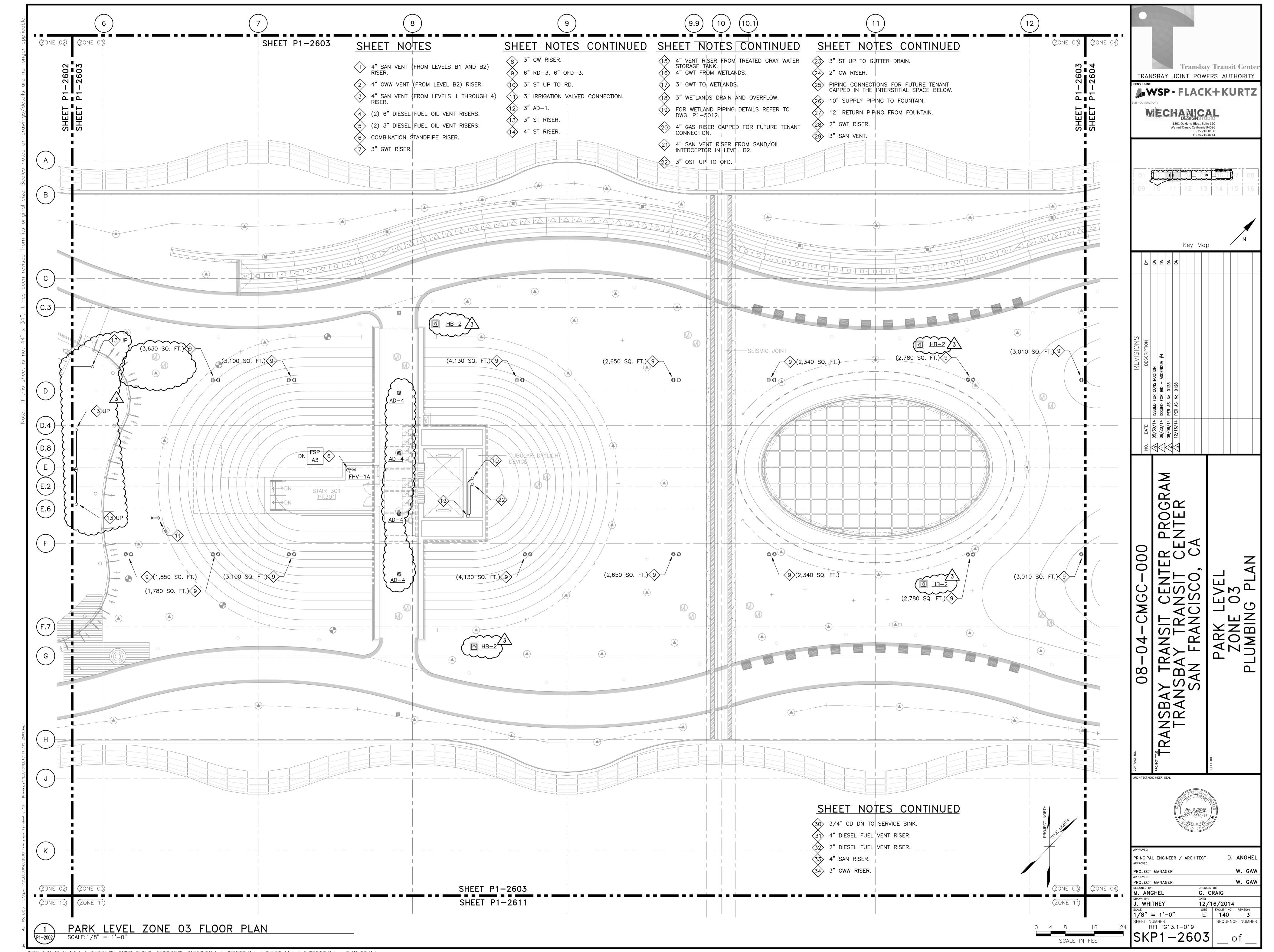


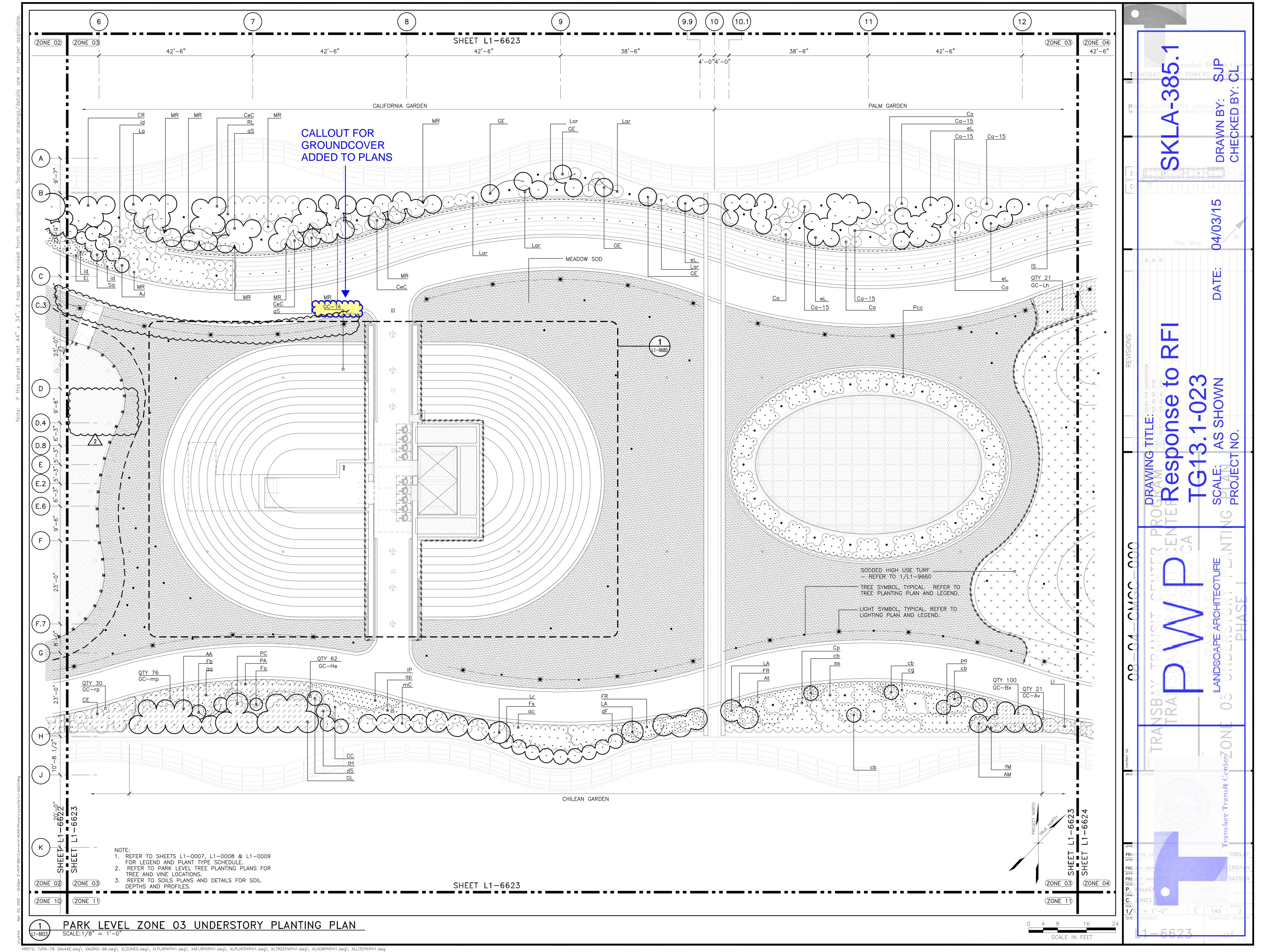


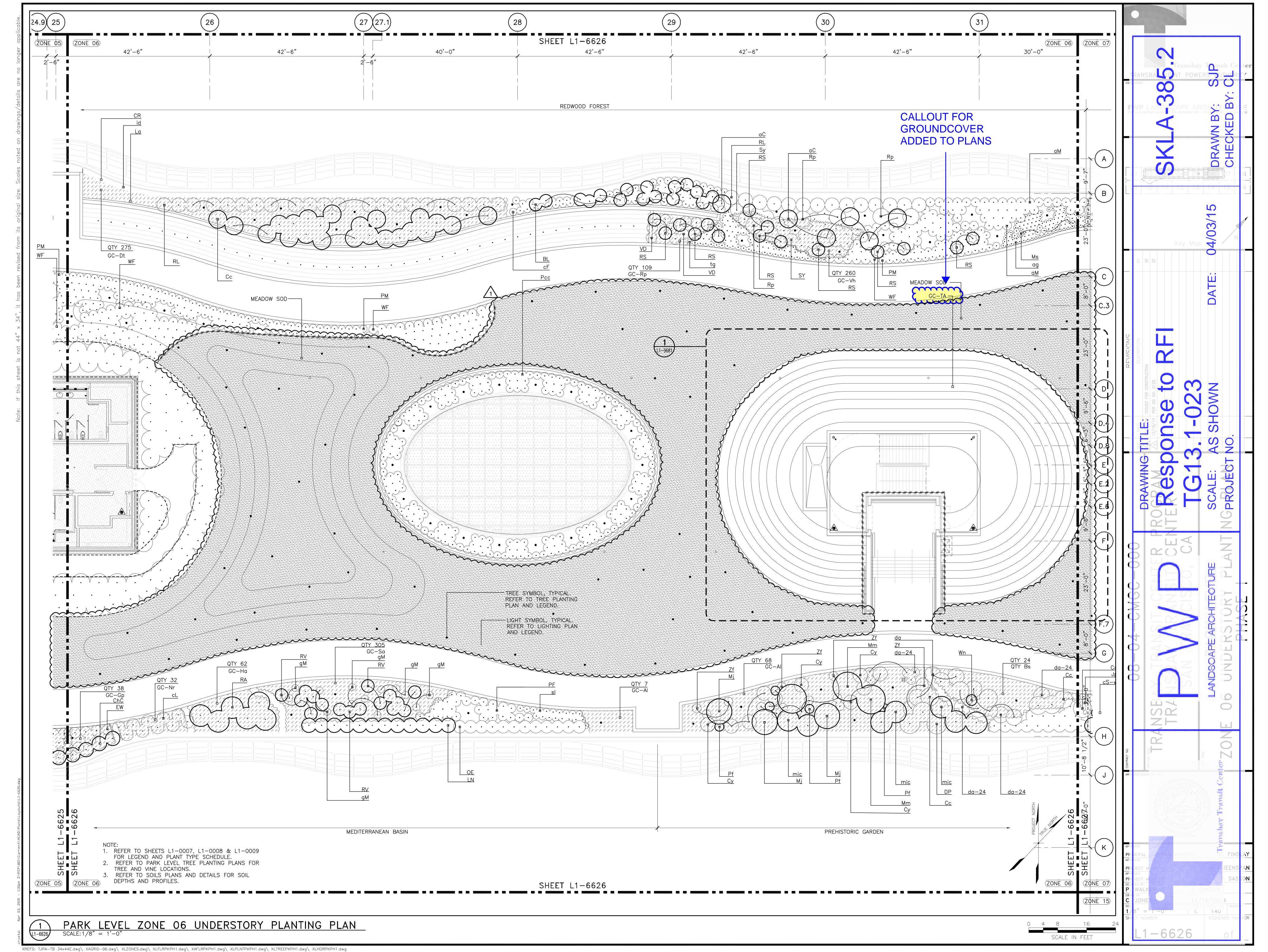


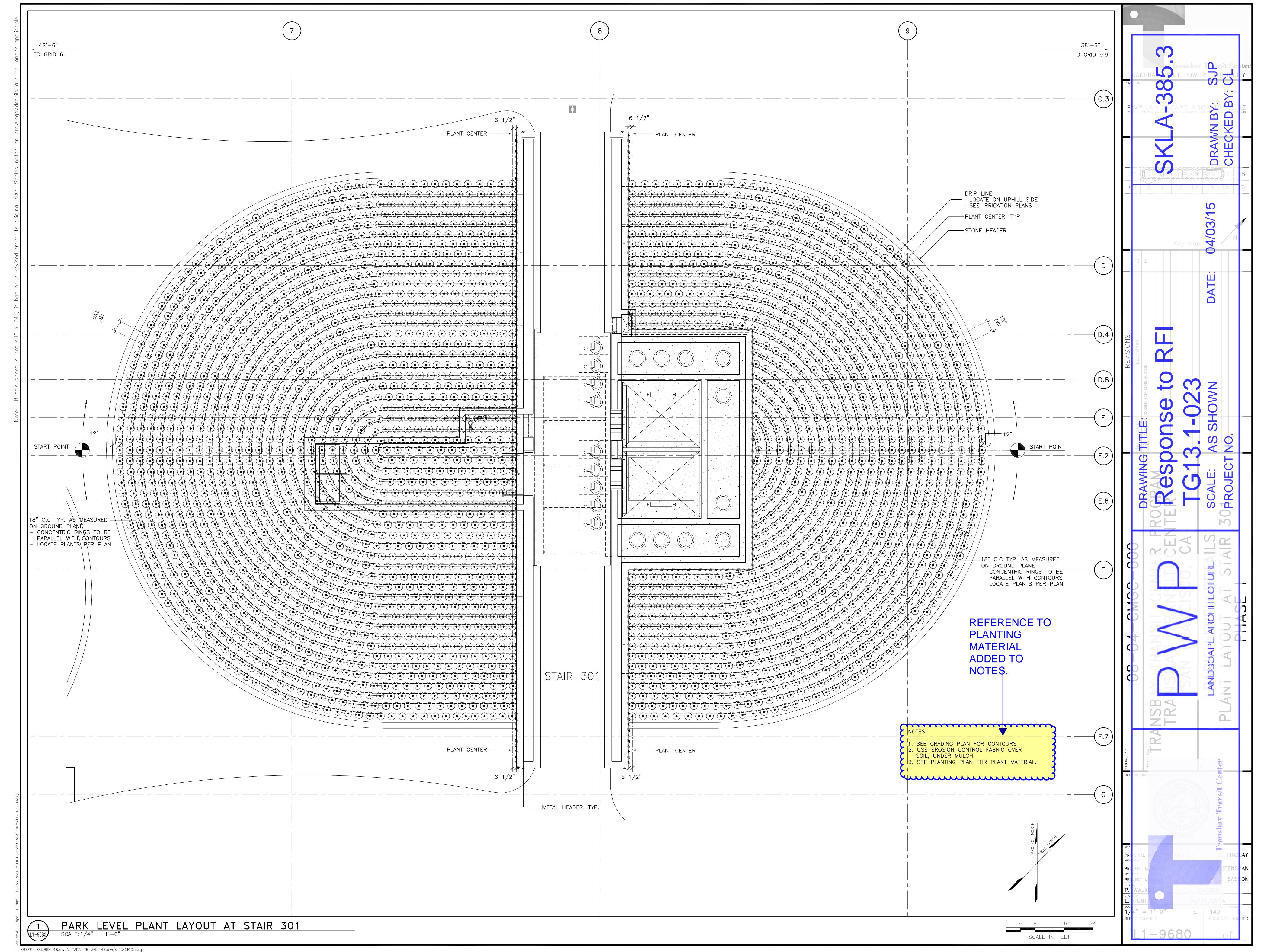


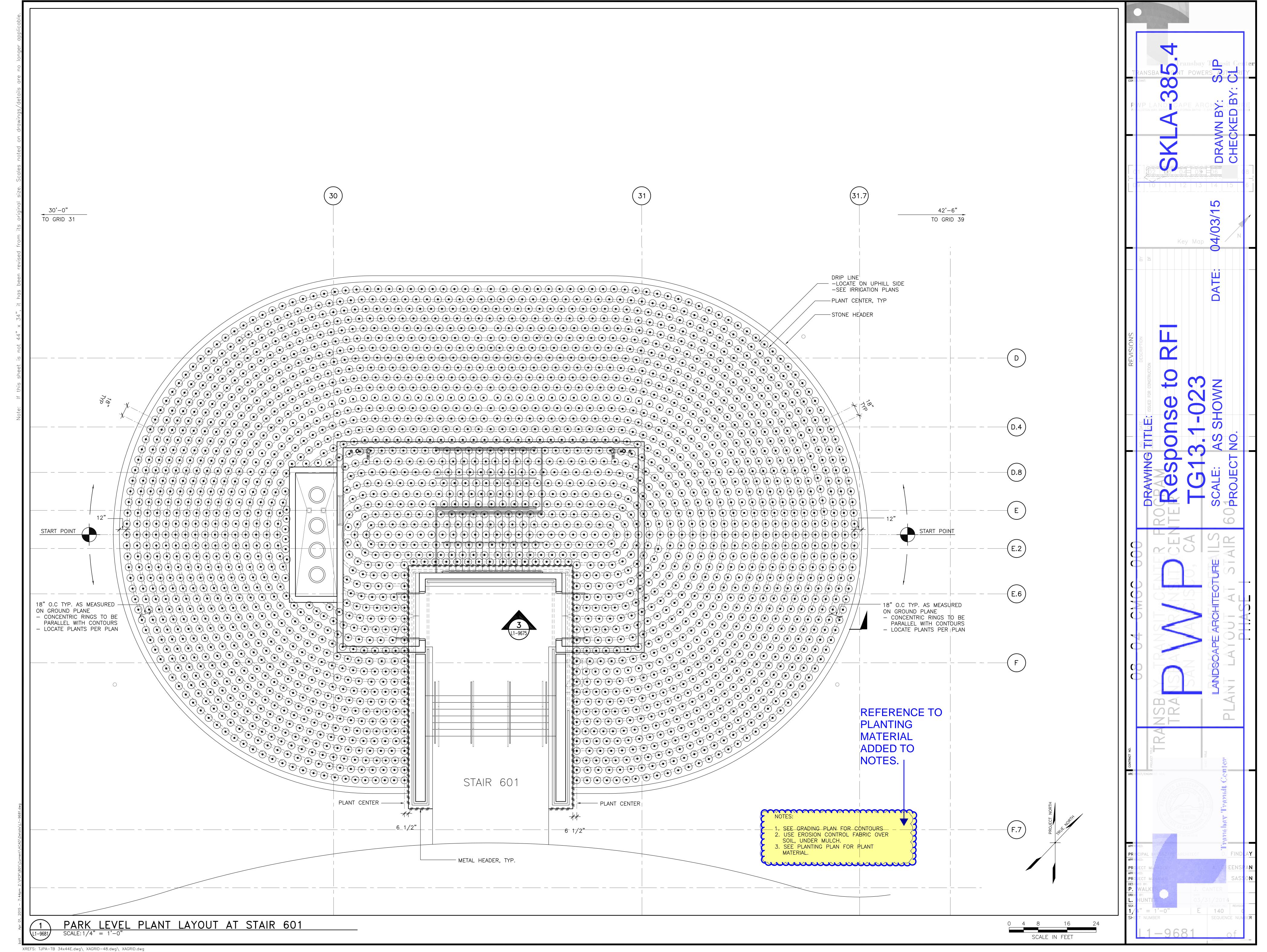


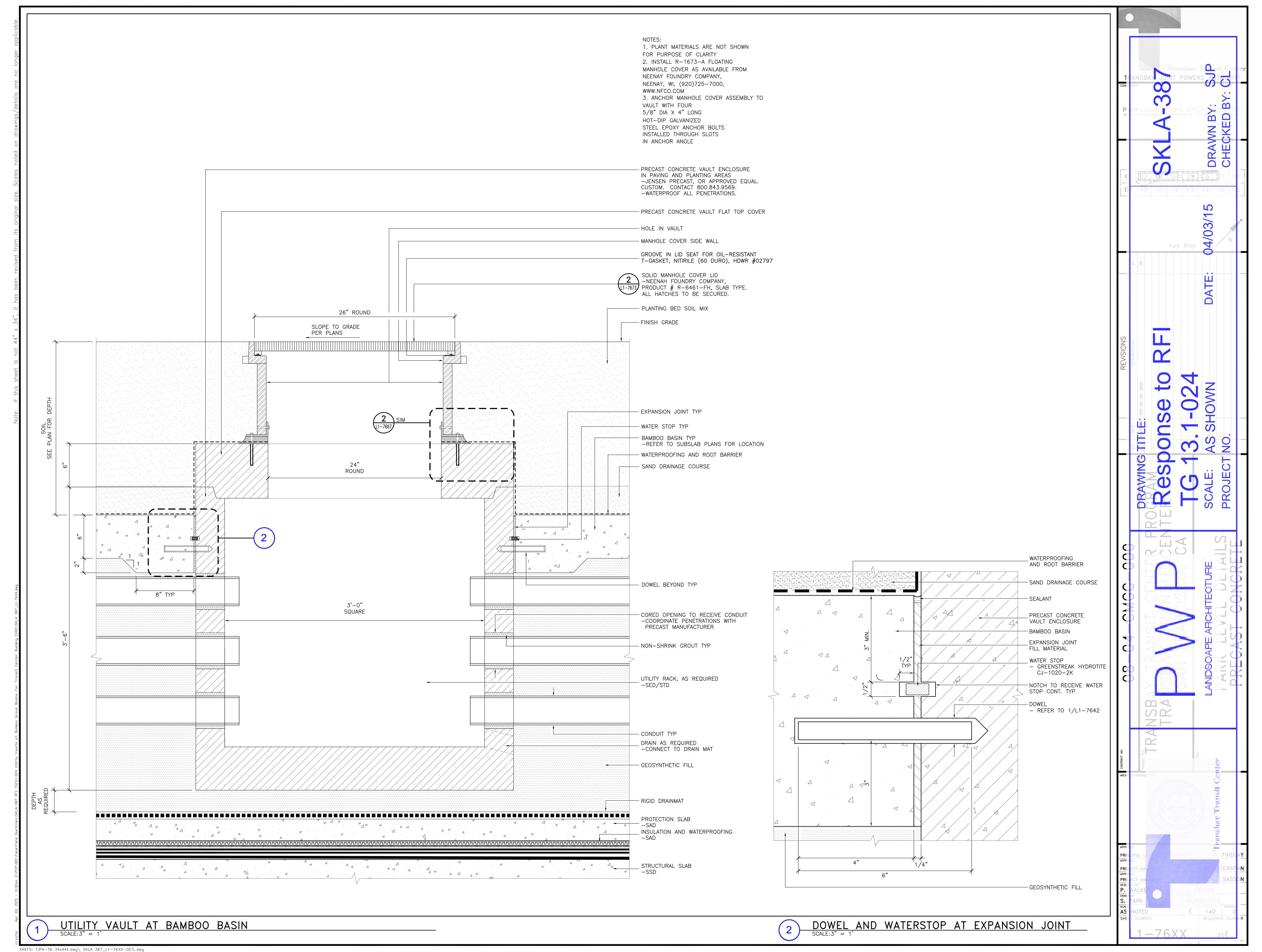


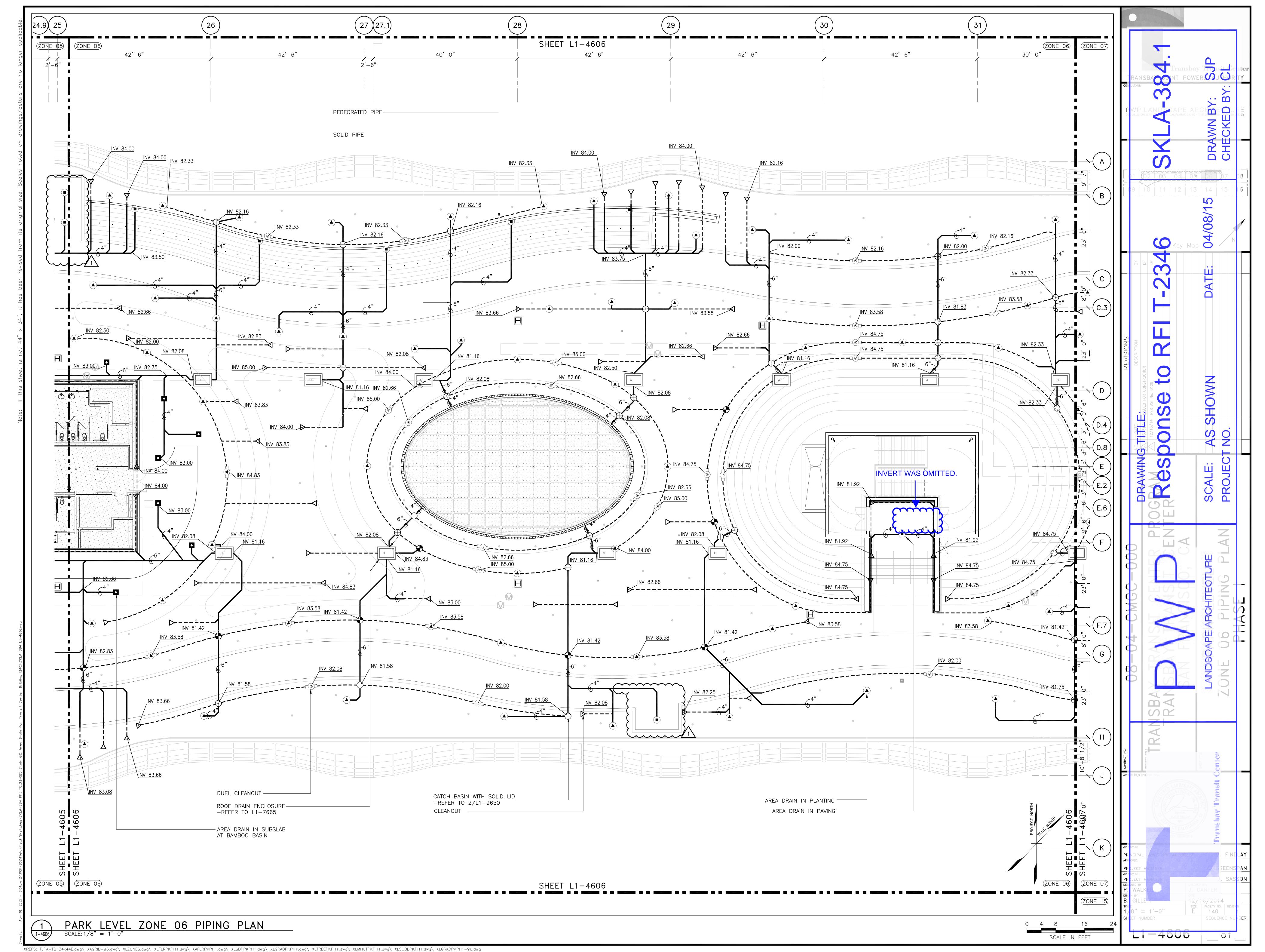


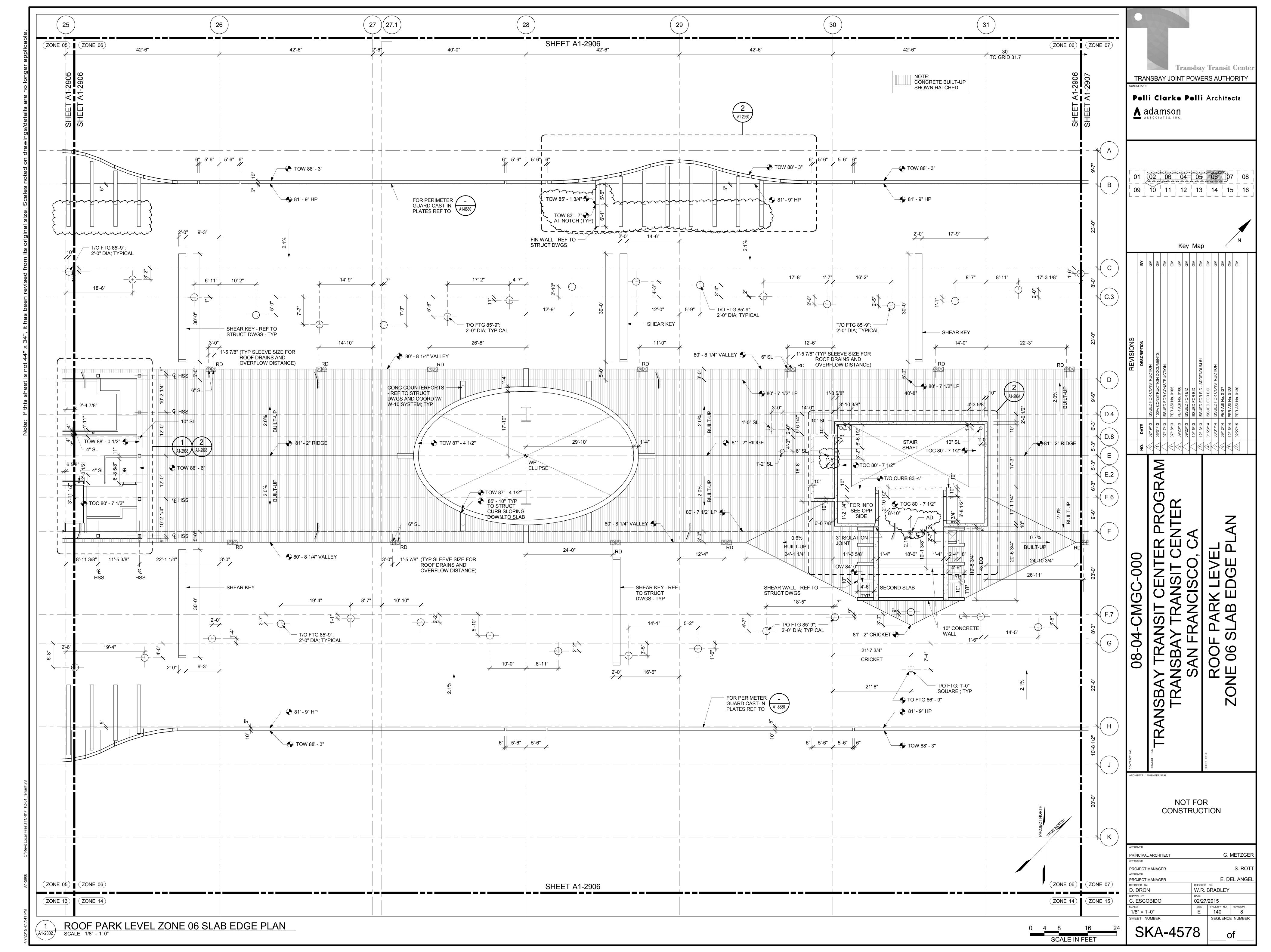


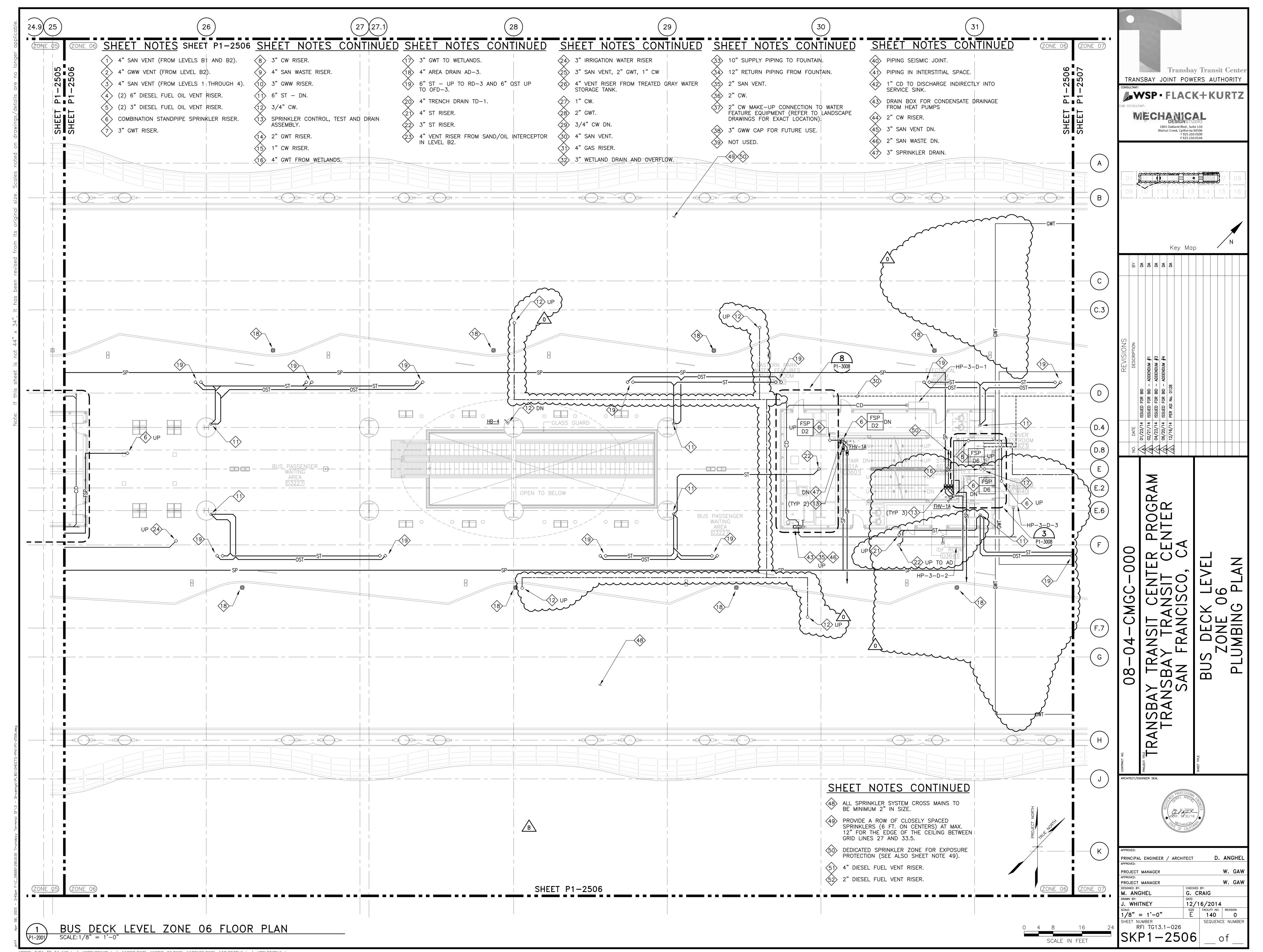


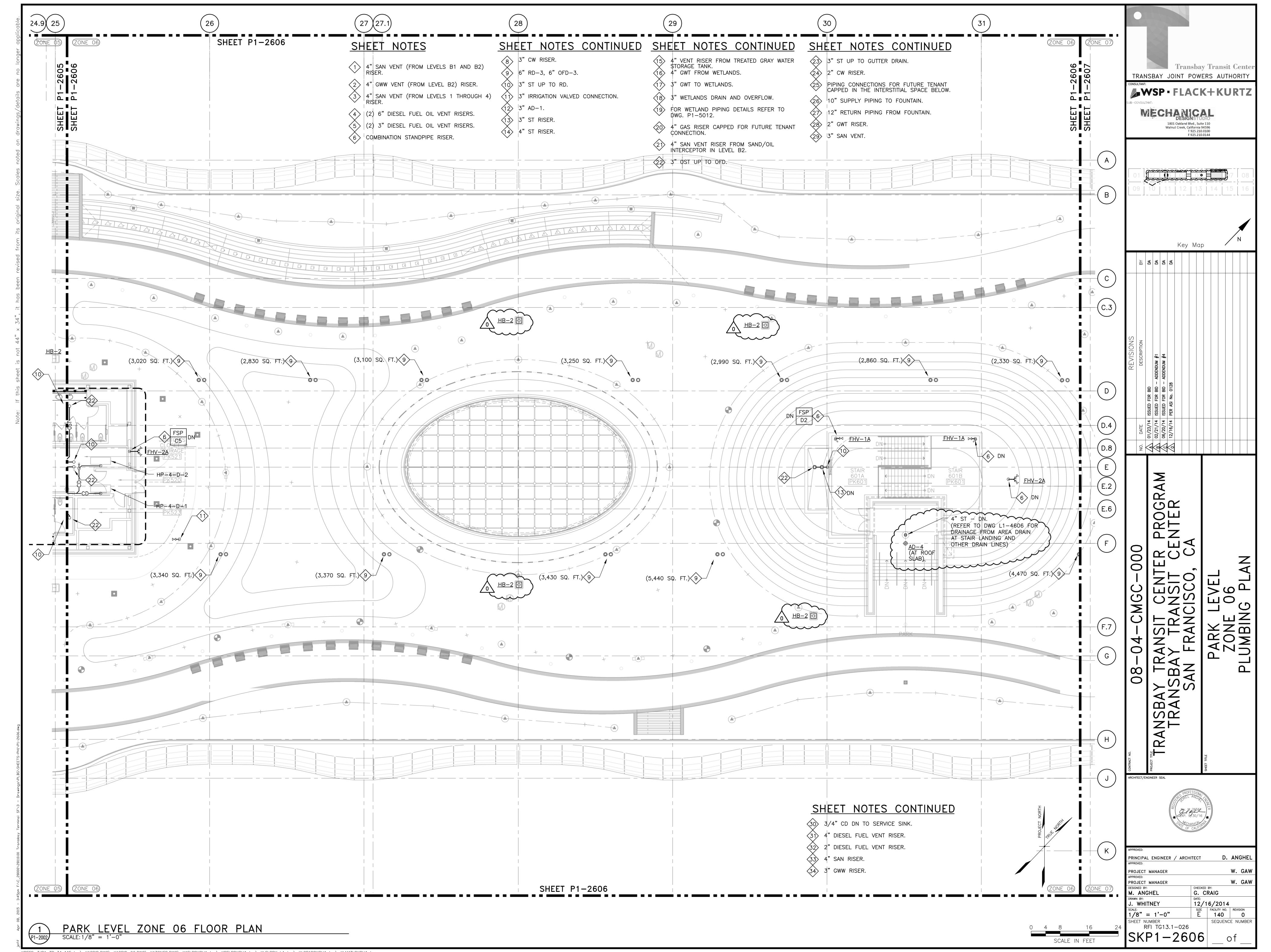


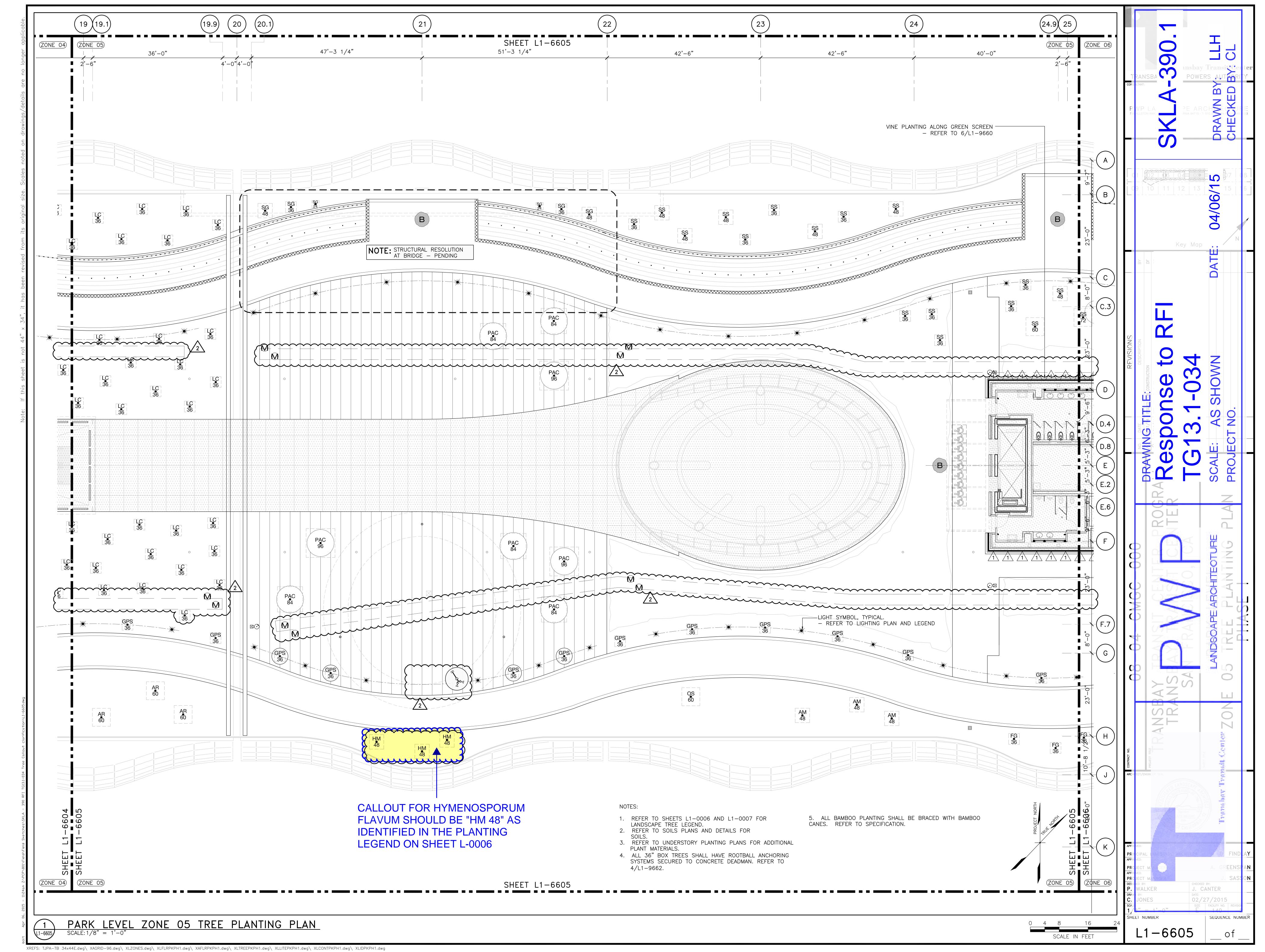


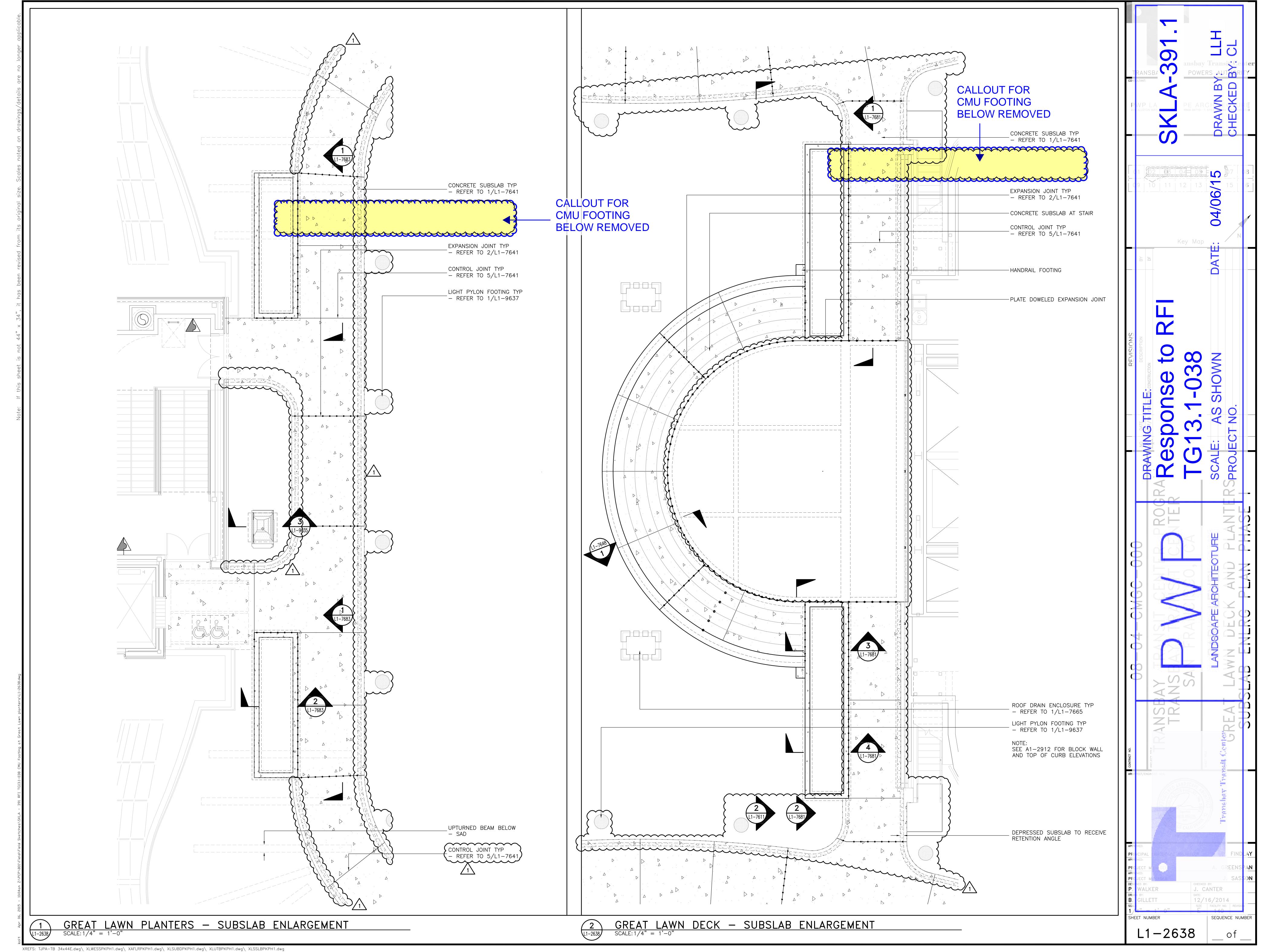


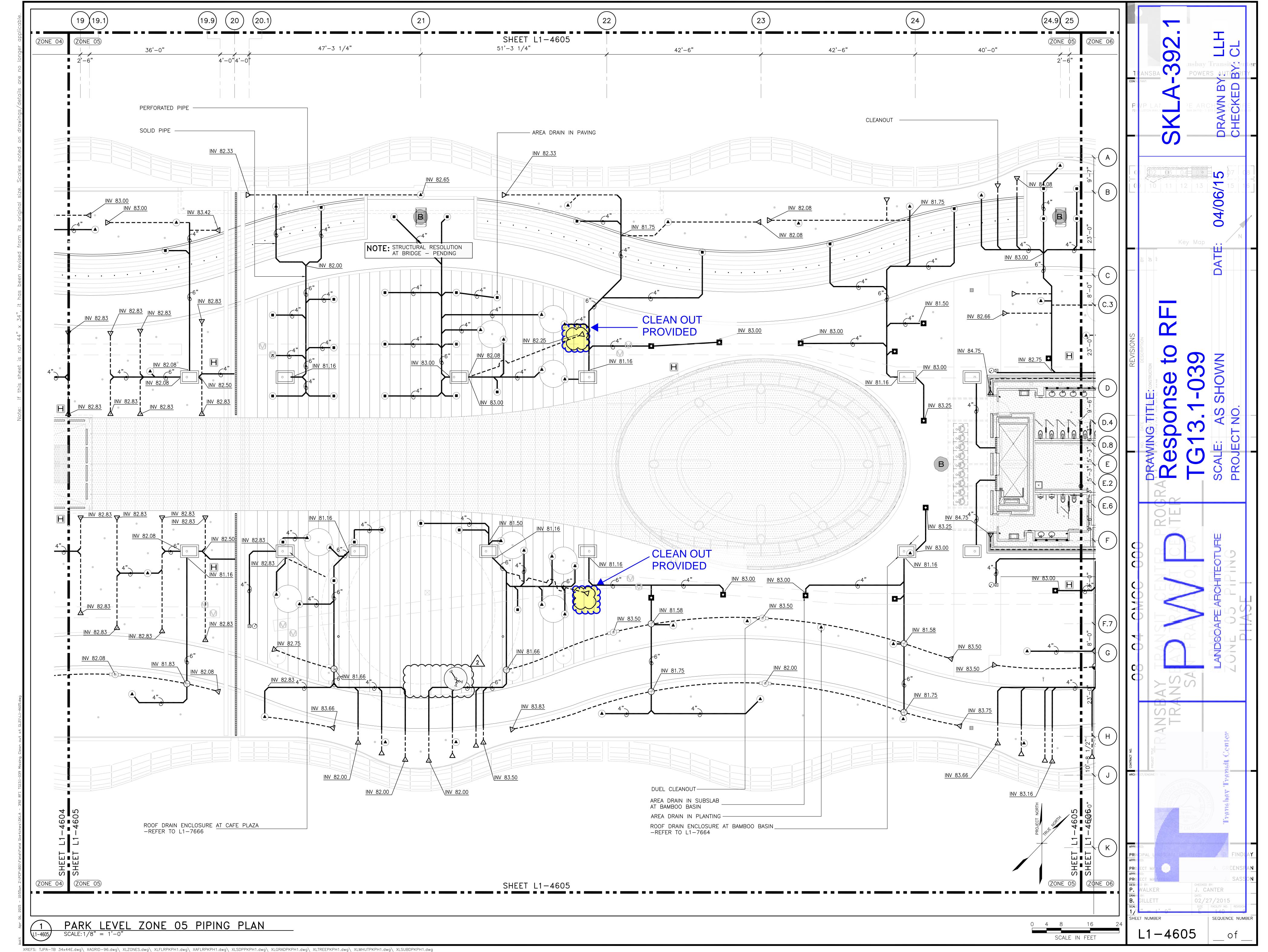


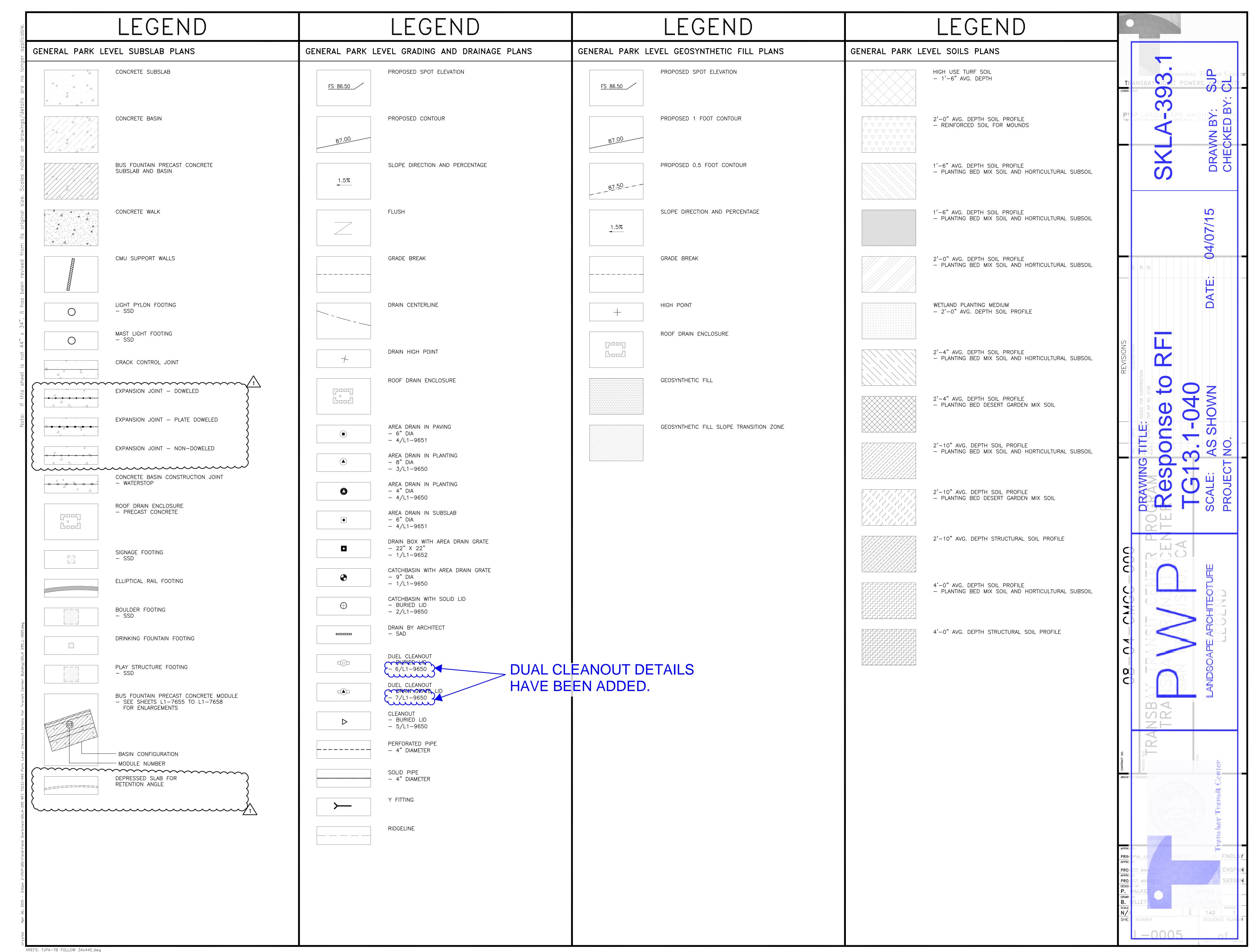


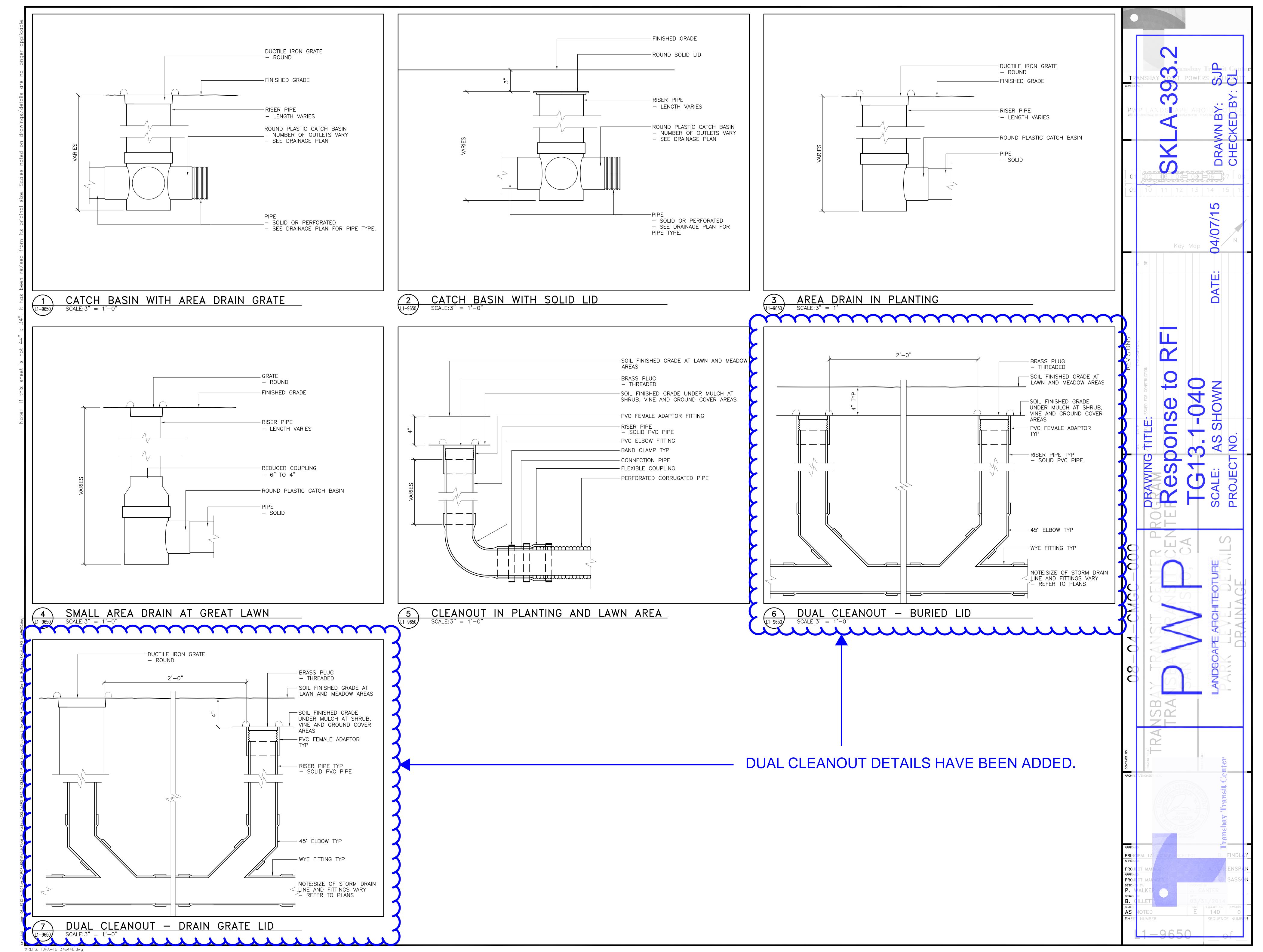












SECTION 33 41 19 – LANDSCAPE DRAINAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Solid Storm Drain Pipe, indicated on Landscape Drawings.
 - 2. Perforated Subdrain Pipe System indicated on Landscape Drawings.
 - 3. Planting Area Catch Basins, Area Drains, and Clean-outs Indicated on the Landscape Drawings.
 - Bi-level Drains, Paving Area Drains and Subslab Drains Indicated on the Landscape Drawings.
 - 5. Planter Drains Indicated on the Landscape Drawings.
 - 6. Cleanout/Inspection Cover in Paving.
 - 7. Rigid Drain Mat.
 - 8. Flexible Drain Mat.
 - 9. Geotextile Fabric.

1.2 REFERENCES

- A. ASTM American Society for Testing and Materials:
 - 1. A 48 Specification for Gray Iron Castings.
 - 2. D 1248 Specification for Polyethylene Plastics Molding and Extrusion Materials.
 - 3. D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - 4. D 2321 Practice for Underground Installation of Flexible Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.
 - 5. D 2729 Specification for PVC Sewer Pipe and Fittings.
 - 6. D 3034 Specification for Type PSM PVC Sewer Pipe and Fittings.
 - 7. D 3350 Specification for Polyethylene Plastics Pipe and Fitting Materials.
 - 8. F 405 Specification for Corrugated Polyethylene Tubing and Fittings.
 - 9. F 679 Specification for PVC Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
 - 10. F 949 Specification for PVC Corrugated Sewer Pipe with Smooth Interior and Fittings.

1.3 DEFINITIONS

- A. PVC: Polyvinyl Chloride.
- B. SDR: Standard Dimensional Ratio.
- C. HDPE: High Density Polyethylene.
- D. RCP: Reinforced Concrete Pipe.
- E. Finished Subgrade Surface: Final soil subgrade surface on which topsoil, aggregate base, or paving is installed.
- F. Acceptance, Acceptable, or Accepted: Acceptance by the TJPA Representative in writing.

G. Excessive Compaction: Planting Medium compaction greater than specified in Section 32 91 00, part 3.2.C-2

1.4 ACTION SUBMITTALS

A. Product Data:

- 1. Pipe and Pipe Fittings.
- 2. Geotextile Fabric and Sock.
- 3. Clean-out Adaptor Coupling and Plug.
- 4. Flexible Coupling.
- 5. Drain Grates.
- 6 Drain Fixtures
- B. Test Reports: Sand backfill sieve analysis with test date less than 2 weeks old.
- C. Samples: Submit sample of fabricated sock and proposed Field connections.

1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer's Instructions: Trench Drain Installation Instructions.
- B. Record Documents:
 - 1. Maintain on the construction site a record of materials and equipment installed each day.
 - 2. Daily record information neatly to scale, on full-size prints of the Construction Documents.
 - 3. Include changes, substitutions, and manufacturer's names and catalog numbers for materials and equipment.
 - 4. Show actual locations of drains, grates, clean-outs and piping.
 - 5. Show dimensions from easily-identifiable permanent structures such as walls, curbs, buildings or walks.
 - 6. Procure reproducibles of the current Construction Documents from the TJPA.
 - 7. After Work completion, deliver information noted on reproducibles to the TJPA.

1.6 QUALITY ASSURANCE

- A. Contractor Qualifications: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.
- B. Regulatory Requirements: Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Storage:

- 1. Store products with protection from weather or other conditions which would damage or impair the effectiveness of the product.
- 2. Protect PVC pipes and fittings from direct sunlight.
- 3. Store pipe on firm, well-draining, continuous surface equal to or longer than pipe.

1.8 SITE CONDITIONS

- A. Environmental Requirements: Lay and join pipe in dry trenches.
- B. Existing Conditions:
 - 1. Prior to Work commencement, review and clearly mark in field horizontal and vertical locations of existing public underground utilities and structures with appropriate utility companies.
 - 2. Prior to Work commencement, review and clearly mark in field horizontal and vertical locations of existing private underground utilities and structures with the TJPA's Representative.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS AND SUPPLIERS

- A. Plastic Catch Basins, Atrium and Flat Drain Grates:
 - 1. National Diversified Sales (NDS), Camarillo, CA.
 - 2. Advanced Drainage Systems, Inc., OH.
 - 3. Or equal.
- B. Perforated Pipe:
 - 1. Advanced Drainage Systems, Inc., Columbus, OH.
 - 2. Hancor Inc., Findlay, OH.
 - 3. Or equal.
- C. Flexible Couplings:
 - 1. Fernco, Inc., West Sparks, NV.
 - 2. Mission Rubber Company, Corona, CA.
 - 3. Or equal.
- D. Planter Drain Fixtures for Raised Planters:
 - 1. Zurn Industries, Erie, PA; www.zurn.com.
 - 2. 1...JR Smith, Montgomery, AL; www.jrsmith.com.
 - 3. <u>...1</u> Or equal.
- E. Slot Drain Pipe: See Section 05 60 00.
- F. Rigid Drain Mat:
 - 1. Vespro, Inc., San Rafael, CA; (415) 459-7311; www.vesproinc.com.
 - 2. 1... Atlantis Flo-Cell; www.atlantiscorp.com.
 - 3. ...1 Or equal.
- G. Flexible Drain Mat for Back of Walls:
 - 1. Tenax Corporation, Baltimore, MD; (800) 356-8495; www.tenax.net.
 - 2. 1...Tencate Geosynthetics, Pendergrass, GA; (706) 693-2226.
 - 3. ...1 Or equal.

- H. Floor Drain in Paving:
 - 1. Zurn, Erie, PA; www.zurn.com.
 - 2. 1...JR Smith, Montgomery, AL; www.jrsmith.com.
 - 3. ...1 Or equal.
- I. Geotextile Fabric:
 - 1. Carthage Mills, Cincinnati, OH.
 - 2. Propex, Chattanooga, TN.
 - 3. Or equal.

2.2 MATERIALS

- A. Solid Pipe: PVC with rubber ring joints, SDR 35; ASTM D 3034 for 4 or 6-inch diameter pipe, as indicated in Drawings.
- B. Solid Pipe Fittings: PVC, ASTM D 3034.
- C. Perforated Pipe: AASHTO Class II perforations, Category 4, Grade P33; double-wall, corrugated, HDPE, smooth-interior wall, 4-inch diameter pipe.
- D. Perforated Pipe Fittings: HDPE manufactured by solid pipe manufacturer.
- E. Sock for Perforated Pipe and Geotextile at Drains in Aggregate Mulch: Carthage 30 Percent; SI Geosolutions Geotex 117F.
- F. Clean-out for Planting Areas PVC; Schedule 80 female adaptor with brass male pipe thread plug.
- G. Dual Clean-Out in Planting Areas: PVC; Schedule 80 female adaptor with brass male pipe thread plug.
- H. Sand Backfill for Perforated Pipe Trenches: Refer to Section 32 91 00, Planting Soil Preparation.
- I. Flexible Coupling: Heavy-duty 3/8-inch thick, minimum 5 inches long, flexible PVC with stainless-steel clamps designed and manufactured specifically to connect corrugated polyethylene pipe to PVC pipe.
- J. Catch Basins: Eight-inch round Nyoplast drain basin with manufacturer's lateral connections to fit lateral pipe sizes indicated on Drawings.
 - 1. Area Drain Grate for Catch Basins in Planting: with 8-inch diameter ductile iron grate painted black.
 - 2. Solid Lid with vandal-proof secured top for Catch Basins: Solid end cap.
 - 3. Or equal.
- K. Area Drains for Concrete Paving and Subslabs:
 - 1. JR Smith 2250 for 6-inch pipe With vandal-proof secured top.
 - 2. Or equal.

- L. Area Drains at Amphitheater Steps in Lawn:
 - 1. 4-inch round black NDS #11 with vandal-proof secured top.
 - 2. Or equal.
- M. Planter Drains for Radial Planters:
 - 1. Zurn Z-350, 24-inch long standpipe, 4-inch pipe size, with vandal-proof secured top.
 - 2. Or equal.
- N. Rigid Drain Mat:
 - 1. Versicell, 30mm thick.
 - 2. Or equal.
- O. Flexible Drain Mat for Back of Walls:
 - 1. Tenax Tenflow.
 - 2. Or equal.
- P. Area Drain in Planting:
 - 1. NDS Spee-D Basin with outlets as needed. Use manufacturer's recommended fittings and 6-inch round black plastic-ductile iron grates, with vandal-proof secured top.
 - 2. Or equal.
- Q. Bi level Area Drains in Resin Paving and Cobblestone Paving:
 - 1. Zurn Z415BZ, polished nickel bronze finish, grate 5-3/16-inch diameter. High extension adapter and vandal-proof secured top.
 - 2. Or equal.
- R. Bamboo Planting Area Drain:
 - 1. <u>1...</u>Precast concrete (Christy drain box No. V64, or equal) Box with cast iron grate Co. V64-71C. Cut 1-inch by 1-inch weep holes in bottom unit at 7 inches on center. Set drain at finsh grade (under aggregate mulch) cover grate with geotextile fabric. Center drain box over subslab drain. With vandal-proof secured top.... 1
 - 2. Or equal.
- S. Cleanout in Paving:
 - 1. Jay R. Smith 4233-04-NB-U with vandal-proof secured top
 - 2. Or equal.
- T. <u>1...</u>Ground Level Area Drain in Paving: Zurn 2400 Z5B400B; Type B1, round adjustable light duty strainer with square heel proof openings and vandal proof secured top. Polished bronze finish, or equal....1

3.1 PREPARATION

A. Protection:

- 1. Use every possible precaution to prevent damage to existing conditions to remain.
- 2. Provide barricades, fences or other barriers as necessary to protect existing conditions to remain from damage during construction.
- 3. Use every possible precaution to prevent excessive compaction of planting area soil within or adjacent to the areas of Work.
- 4. Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing plants to remain.
- Submit written notification of conditions damaged during construction to the TJPA's Representative within one working day of observed damage and before damage is covered

3.2 SURVEY REQUIREMENTS

- A. Lines and Levels: Establish lines and levels, locate and lay out by instrumentation and similar appropriate means for piping and catch basins.
- B. Staking: Provide a sufficient quantity of grade stakes as required to install piping, catch basin rims, and clean outs to elevations, slopes, and horizontal locations indicated on the Drawings.

3.3 SOLID AND PERFORATED PIPE INSTALLATION

A. Manufacturer's Requirements: Conform to the installation requirements of the pipe manufacturer's current printed instructions.

B. Pipe Laying:

- 1. Furnish and place in position necessary batter boards, string lines, plummets, graduated poles, etc., required in establishing and maintaining the lines and grades.
- 2. Protect batter boards and location stakes from possible damage or change of location.
- 3. Begin laying of the pipe on the prepared foundation at the outlet or downstream end with the spigot or tongue end of the pipe joint pointing downstream and proceed toward the inlet or upstream end with each abutting section of pipe properly matched, true to the established lines and grades.
- 4. Provide acceptable equipment for hoisting and lowering the sections of pipe into the trench without disturbing the prepared bedding foundation or the sides of the trench.
- 5. Clean ends of the pipe carefully before the pipe is placed in the trench.
- 6. As each length of pipe is laid, protect openings to prevent the entrance of earth or bedding material.
- 7. Fit and match pipe so that when laid in the prepared bedding it will form a smooth, uniform conduit.

C. Backfill Under Paving Over Solid Pipe:

 Backfill as specified above for general backfill, except backfill remainder of trench above the granular soil backfill material with field sand in 6-inch maximum loose depth lifts, and moisten each lift and compact to 95 percent relative compaction as determined by ASTM D 1557.

- 2. Backfill to permit the rolling and compaction of the filled trench with the adjoining material to provide the required bearing value so that paving of the area can proceed immediately after backfilling is complete.
- D. Backfill in Planting Areas Over Solid Pipe:
 - 1. Backfill as specified above for general backfill except bring granular soil backfill up to finished subgrade surface level.
 - 2. Compact granular soil backfill to a maximum 75-80 percent relative compaction as determined by ASTM D 1557.
 - 3. Backfill top 12 inches of trenches with topsoil backfill.
 - 4. Settle topsoil by sprinkling with minimum 2 inches of water.
- E. Backfill in Planting Areas Over Perforated Subdrain Pipe:
 - 1. Backfill with drain rock-drainage material to elevations indicated on Drawings.
 - 2. Apply water to settle backfill to 75-80 percent relative compaction.
 - 3. Do not compact more than 75-80 percent relative compaction.
- F. Settlement: If settlement occurs, fill depressions with topsoil, raise plants and mulch or reseed as required to repair settled planting areas to the original accepted condition.

3.4 TOLERANCES

- A. Catch Basin and Area Drain Rim Elevations: Plus or minus 1/4-inch.
- B. Trench Drain Rim Elevations: Flush with adjacent paving.

3.5 PROTECTION

- A. Pipe Lines: Protect from excessive loads until date of Final Completion.
- B. Drain Grates: Protect from excessive loads until date of Final Completion.

END OF SECTION 33 41 19

SPECIFICATION ISSUE LOG

Revision	Date
0	03/31/14
1	12/16/14