FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3
5

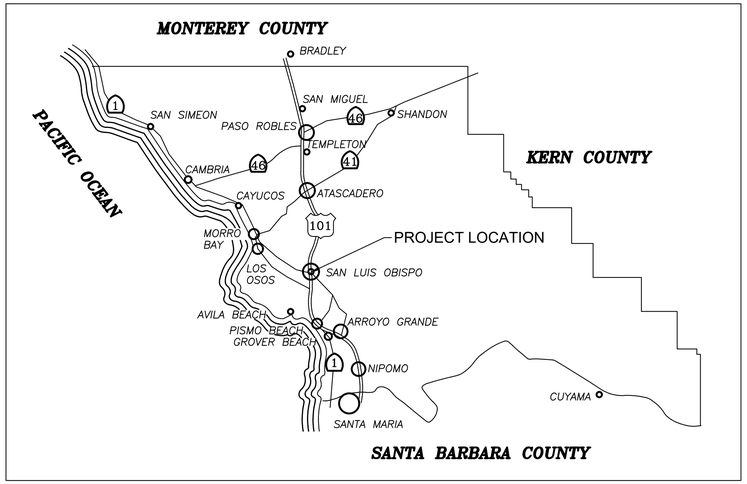
IMPROVEMENT PLANS

FOR

REGIONAL TRANSPORTATION AUTHORITY (RTA) TRANSIT CENTER

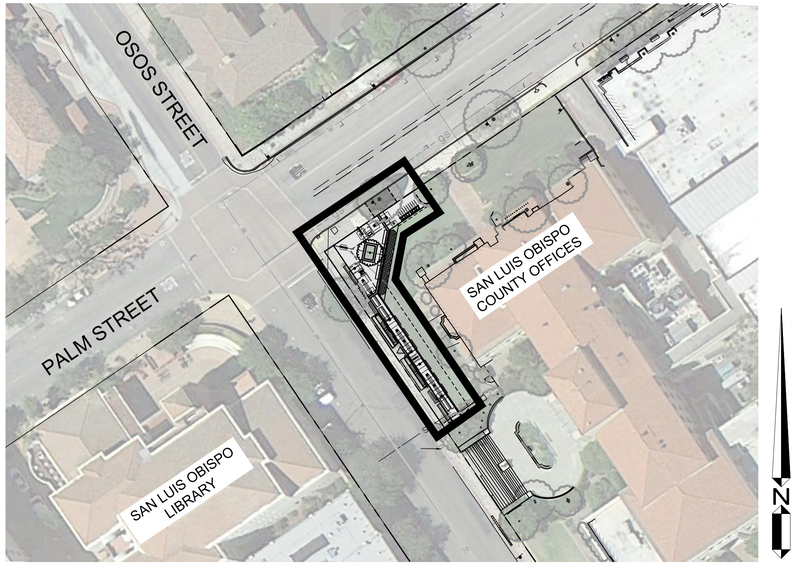
179 CROSS STREET

SAN LUIS OBISPO, CA 93401



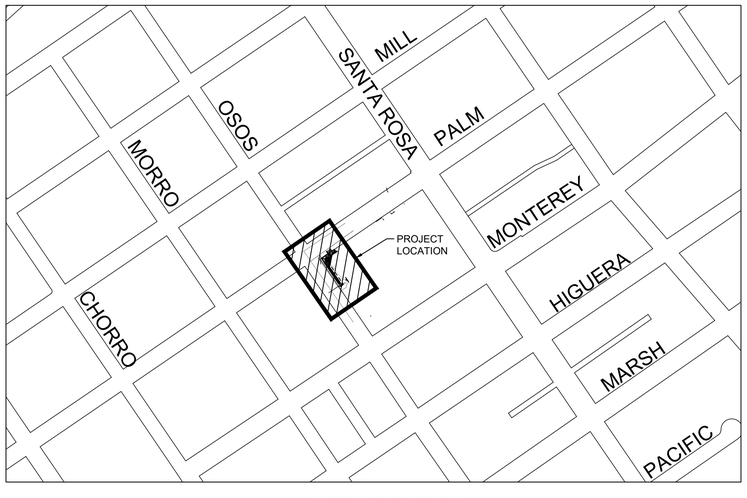
VICINITY MAP

NTS



PROJECT MAP

SCALE: 1" = 40'



SITE LOCATION

SCALE: 1" = 250'

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REGISTERED PROFESSIONAL ENGINEER
ESAU BLANCO
No. 62853
CIVIL
STATE OF CALIFORNIA

SIGNATURE
5/21/19
DATE SIGNED

REVISIONS			
NO.	DATE	DESCRIPTION	BY
0	5/23/19	ISSUED FOR BIDDING	EB

RTA TRANSIT CENTER
TITLE SHEET
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EB
DRAWN BY: MJH
DATE: 03/15/19

DRAWING NO.
C1.1
1 OF 20 SHEETS

FILE NAME: 1307-0003 TITL.DWG

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3

GENERAL NOTES

1. GIVEN THAT THE PROPERTY IS LEASED BY RTA FROM THE COUNTY OF SLO, THE COUNTY OF SLO PUBLIC WORKS SHALL BE THE LEAD AGENCY IN TERMS OF INSPECTION AND SIGN OFF. RTA WILL INSPECT CONCURRENTLY WITH THE COUNTY. FOR ALL WORK WITHIN THE CITY OF SLO RIGHT OF WAY, CITY OF SLO WILL BE LEAD AGENCY IN TERMS OF SIGN OFF.

2. A SEPARATE CITY OF SAN LUIS OBISPO ENCROACHMENT PERMIT IS REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY OR WITHIN CITY EASEMENTS FOR CONNECTIONS TO PUBLIC UTILITIES. WORK REQUIRING AN ENCROACHMENT PERMIT INCLUDES BUT IS NOT LIMITED TO DEMOLITIONS, UTILITIES, WATER, SEWER, AND FIRE SERVICE LATERALS, CURB, GUTTER, AND SIDEWALK, DRIVEWAY APPROACHES, SIDEWALK UNDERDRAINS, STORM DRAIN IMPROVEMENTS, STREET TREE PLANTING OR PRUNING, CURB RAMPS, STREET PAVING, AND PEDESTRIAN PROTECTION OR CONSTRUCTION STAGING IN THE RIGHT-OF-WAY.

3. CONTACT THE CITY OF SLO ENCROACHMENT PERMITS AT (805) 781-7015 AT LEAST 48 HOUR NOTICE FOR ANY REQUIRED ENCROACHMENT PERMIT INSPECTION OR FINAL INSPECTION.

4. A TRAFFIC AND PEDESTRIAN CONTROL PLAN SHALL BE SUBMITTED TO THE CITY OF SLO PUBLIC WORKS DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO ENCROACHMENT PERMIT ISSUANCE.

5. THE PUBLIC IMPROVEMENTS SHALL BE SUBSTANTIALLY COMPLETE TO THE SATISFACTION OF THE COUNTY OF SLO PUBLIC WORKS INSPECTOR PRIOR TO FINAL INSPECTION APPROVALS.

6. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF SAN LUIS OBISPO STANDARD SPECIFICATIONS AND ENGINEERING STANDARDS DATED MAY 2018.

7. THE CONTRACTOR SHALL POSSESS A CLASS "A" LICENSE AND THE ELECTRICAL SUBCONTRACTOR SHALL POSSES A "C10" LICENSE AT THE TIME THE CONTRACT IS AWARDED.

8. THE CONTRACTOR SHALL COMPLY WITH CAL/OSHA REGULATIONS REGARDING SAFETY OF EXCAVATION. EXCAVATIONS SHALL BE ADEQUATELY SHORED, BRACED AND SHEETED TO PROTECT AGAINST INJURY, AND PREVENT DISTURBANCE TO EXISTING FACILITIES THAT ARE TO REMAIN AND BE PROTECTED IN PLACE.

9. ALL CURB DATA CALLOUTS ARE TO FACE OF CURB, UNLESS OTHERWISE NOTED. FACE OF CURB SHALL BE DEFINED AS FLOWLINE OF CURB FACE.

10. ALL FINAL CONTOUR GRADING SHALL BE AS SHOWN, OR AS DIRECTED BY THE ENGINEER.

11. NO CLOSURES OF LANES, DRIVEWAYS OR PARKING AREAS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL 10 BUSINESS DAYS IN ADVANCE BY THE CITY TRAFFIC OPERATIONS MANAGER AND RTA MANAGER, MAINTENANCE AND FACILITIES (805) 781-4835.

12. THE CONTRACTOR SHALL PROVIDE CONTINUOUS ACCESS TO THE SITE AND ALL ADJOINING PARCELS, COORDINATE THE WORK WITH UTILITY AGENCIES AND LANDOWNER USERS, AS WELL AS OTHER CONSTRUCTION WORK IN THE AREA.

13. THE CONTRACTOR SHALL NOTIFY THE COUNTY OF SLO PUBLIC WORKS DEPARTMENT AT LEAST FIVE WORKING DAY PRIOR TO THE BEGINNING OF CONSTRUCTION AT (805) 781-5252 IN ORDER TO SCHEDULE A PRECONSTRUCTION MEETING. MEETING ATTENDEES SHALL INCLUDE:
   - RTA MANAGER, MAINTENANCE AND FACILITIES (805) 781-4835
   - COUNTY OF SLO, DIVISION MANAGER, ADMIN (805) 781-5295
   - CITY OF SLO PUBLIC WORKS (805) 781-7015
   - ENGINEER, WALLACE GROUP, (805) 544-4011
   - COUNTY OF SLO PUBLIC WORKS INSPECTOR (805) 781-5252
   - RTA INSPECTOR (TBD)
   - CONTRACTOR (TBD)
   - GEOTECHNICAL INSPECTOR (TBD)

13. THE CONTRACTOR SHALL PRACTICE SAFETY AT ALL TIMES AND SHALL FURNISH ERECT AND MAINTAIN SUCH FENCES, BARRICADES, LIGHTS AND SIGNS NECESSARY TO GIVE ADEQUATE PROTECTION TO THE PUBLIC AT ALL TIMES.

14. ALL EXCAVATIONS OR TRENCHES IN PAVED OR CONCRETE AREAS SHALL REQUIRE SAW CUTTING IN A NEAT AND UNIFORM MANNER. ALL MATCH OR JOINT LINES TO EXISTING ASPHALTIC CONCRETE OR CONCRETE PAVING WITHOUT REDWOOD HEADERS SHALL BE SAW CUT.

15. THESE PLANS SHALL INCLUDE ALL AS-BUILT REVISIONS PRIOR TO THE ACCEPTANCE OF IMPROVEMENTS BY THE COUNTY OF SLO AND RTA.

16. THE CONTRACTOR SHALL HAVE COPIES OF THE APPROVED PLANS AND SPECIFICATIONS FOR THIS PROJECT ON THE SITE AT ALL TIMES AND CONTRACTOR SHALL BE FAMILIAR WITH ALL APPLICABLE STANDARDS AND SPECIFICATIONS.

17. THE CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT. EXEMPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE CITY OR ENGINEER.

18. SHOULD IT APPEAR THAT THE WORK TO BE DONE OR ANY MATTER RELATIVE THERETO IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL REQUEST IN WRITING FROM THE ENGINEER SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY PRIOR TO THE COMMENCEMENT OF SAID WORK.

19. CONTRACTOR TO PREPARE AND UPDATE WEEKLY A CONSTRUCTION SCHEDULE.

20. CONTRACTOR TO COORDINATE WITH PROPERTY OWNER (COUNTY OF SLO (805) 781-5295) THE USE OF THE LAWN AREA FOR LAYDOWN WITH THE UNDERSTANDING THAT CONTRACTOR IS RESPONSIBLE FOR RETURNING LANDSCAPING TO AS FOUND CONDITION.

21. THE ENGINEER OF RECORD WILL PERFORM PERIODIC REVIEWS OF COMPLETED WORK TO DETERMINE CONFORMANCE WITH THE APPROVED PLANS.

22. ENGINEER OF RECORD WILL VERIFY THAT THE IMPROVEMENTS, WHEN COMPLETED, ARE IN GENERAL CONFORMANCE WITH THE PLANS PRIOR TO THE REQUEST FOR FINAL INSPECTION. THE ENGINEER OF RECORD WILL BE PRESENT WHEN THE FINAL INSPECTION IS MADE.

23. THE CONTRACTOR SHALL NOTIFY THE COUNTY A MINIMUM OF 5 WORKING DAYS PRIOR TO FINAL INSPECTION.

24. CONSTRUCTION WATER WILL NOT BE AVAILABLE TO THE CONTRACTOR ONSITE. CONTRACTOR TO PROVIDE SOURCE OF CONSTRUCTION WATER.

25. RTA WILL SUPPLY SURVEYOR AND GEOTECHNICAL INSPECTION IF REQUIRED.

26. ALL SPOILS MUST BE REMOVED FROM SITE.

27. RTA WILL BE RESPONSIBLE FOR THE TEMPORARY RELOCATION OF BUS STOP DURING CONSTRUCTION.

ENVIRONMENTAL NOTES

1. THE CONTRACTOR SHALL UTILIZE BEST MANAGEMENT PRACTICES (BMP) FOR WATER POLLUTION CONTROL IN ACCORDANCE WITH THE SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

2. CONTRACTOR SHALL PROTECT DRAINAGE INLETS WITHIN THE PROJECT LIMITS WITH DRAINAGE INLET PROTECTION (TYPE 3A) (GRAVEL BAG BERM) TEMPORARY.

3. CONTRACTOR SHALL PROVIDE A DESIGNATED TEMPORARY CONCRETE WASHOUT FACILITY OR CONTAIN WASHOUT IN MIX TRUCK.

4. THE CONTRACTOR SHALL TAKE EFFECTIVE ACTION TO PREVENT THE FORMATION OF AN AIRBORNE DUST NUISANCE AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM HIS FAILURE TO DO SO. CONTRACTOR SHALL AT A MINIMUM PERFORM THE FOLLOWING MITIGATION MEASURES:

   A. WATERING OF DISTURBED AREAS DURING GRADING AND CONSTRUCTION TO MINIMIZE AIRBORNE DUST.

   B. STABILIZE DISTURBED AREA WITH EROSION CONTROL MEASURES DURING AND FOLLOWING CONSTRUCTION.

   C. GRADING ACTIVITIES SHALL BE RESTRICTED OR HALTED WHEN WINDS EXCEED 15 MPH AS DEEMED NECESSARY BY THE REPRESENTATIVE OF THE PUBLIC WORKS DEPARTMENT

TRAFFIC NOTES

1. TRAFFIC CONTROL WORK SHALL BE IN CONFORMANCE WITH APPLICABLE PROVISIONS OF THE 2015 CALTRANS STANDARD PLANS AND THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (CAMUTCD, 2014) AS WELL AS OF THE CITY OF SAN LUIS OBISPO (CITY) STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS DATED MAY 2018.

2. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO STATE OF CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CAMUTCD, 2014) REQUIREMENTS.

UTILITY NOTES

1. THE CONTRACTOR SHALL NOTIFY THE UNDERGROUND SERVICE ALERT (U.S.A.) ONE CALL PROGRAM 811 AND THE CITY AT LEAST 48 HOURS IN ADVANCE OF BEGINNING ANY UNDERGROUND WORK.

2. THE CONTRACTOR SHALL EXPOSE AND VERIFY THE LOCATION, ELEVATION AND CONDITION OF EXISTING UTILITY FACILITIES PRIOR TO BEGINNING ANY EXCAVATION OR OTHER UNDERGROUND WORK IN THE VICINITY OF THOSE UTILITIES.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH ALL EXISTING UTILITY COMPANIES FOR WORK AFFECTING THEIR FACILITIES.

4. ALL VALVE AND MANHOLE COVERS TO REMAIN SHALL BE PROTECTED IN PLACE OR ADJUSTED TO GRADE, PER 2018 CITY STANDARD SPECIFICATIONS AND ENGINEERING STANDARDS 6040.

GENERAL CONCRETE NOTES

1. CONCRETE SHALL CONSIST OF TYPE II PORTLAND CEMENT, FINE AGGREGATE, COARSE AGGREGATE, PURE AND POTABLE WATER. CONCRETE SHALL HAVE A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF 3,000PSI.

2. CONCRETE MIX DESIGN SHALL BE PREPARED BY AN ENGINEER REGISTERED IN CALIFORNIA, AND SHALL BE SUBMITTED TO THE ENGINEER OF RECORD 5 WORKING DAYS PRIOR TO CONCRETE POUR.

3. CONCRETE COLOR: FOR SIDEWALK, MIX THE CONCRETE WITH DAVIS "ADOBE" #5964, OR APPROVED ALTERNATIVE, ADDED TO THE CONCRETE IN THE AMOUNT OF 5 POUNDS OF COLOR PER 100 POUNDS OF CEMENT OR THE EQUIVALENT AMOUNT OF LIQUID COLOR TO PRODUCE AN EQUAL QUALITY OF COLOR IN THE FINISHED SURFACE.

4. REINFORCING BARS SHALL BE DEFORMED STEEL CONFORMING TO ASTM A615, GRADE 60.

5. ALL ANCHOR BOLT SPECIFICATIONS ARE PER EQUIPMENT MANUFACTURER'S DESIGN. NO SUBSTITUTIONS WILL BE ALLOWED, UNLESS APPROVED BY THE MANUFACTURER.

6. FOLLOW ALL MANUFACTURER'S REQUIREMENTS FOR ANCHORAGE INSTALLATION.

7. MAXIMUM AGGREGATE SIZE 3/4".

8. EQUIPMENT SHALL HAVE LEVELING NUTS WITH GROUT TO KEEP ALL EQUIPMENT LEVEL. NON-SHRINK GROUT SHALL BE PROVIDED BY THE CONTRACTOR, AND INSTALLED AFTER NEW EQUIPMENT IS LEVELED.

9. CONCRETE FINISH SHALL BE AS NOTED IN DETAIL 6, SHEET C2.3.

UNDERGROUND UTILITIES

UNDERGROUND UTILITY LOCATIONS ARE PLOTTED BASED ON ABOVE GROUND PAINT MARKS BY OTHERS, ABOVE GROUND SURFACE STRUCTURES AND RECORD DRAWINGS. ACTUAL LOCATION MAY DIFFER. ADDITIONAL UNDERGROUND UTILITY LINES MAY EXIST. FOR INFORMATION REGARDING UTILITY LOCATION, SIZE, DEPTH, CONDITION, CONTACT UNDERGROUND SERVICE ALERT (USA).

UNIFORM CODE COMPLIANCE STATEMENT

2016 CALIFORNIA BUILDING CODE. THIS PROJECT HAS BEEN DESIGNED IN ACCORDANCE WITH AND MEETS THE SAN LUIS OBISPO COUNTY ADOPTED CODE AND ORDINANCE REQUIREMENTS EXCLUDING THE CALIFORNIA STATE ACCESSIBILITY STANDARD AND ENGINEER OF RECORD WILL BE RESPONSIBLE FOR CLARIFICATIONS DEEMED NECESSARY DURING THE CONSTRUCTION PHASES.

CULTURAL RESOURCE NOTES

IN THE EVENT ARCHAEOLOGICAL RESOURCES ARE UNEARTHED OR DISCOVERED DURING ANY CONSTRUCTION ACTIVITIES, THE FOLLOWING STANDARDS APPLY.

1. CONSTRUCTION ACTIVITIES SHALL CEASE, AND THE OWNER REPRESENTATIVE, PROJECT ENVIRONMENTAL COORDINATOR AND PLANNING DEPARTMENT SHALL BE NOTIFIED SO THAT THE EXTENT AND LOCATION OF DISCOVERED MATERIALS MAY BE RECORDED BY A QUALIFIED ARCHAEOLOGIST, AND DISPOSITION OF ARTIFACTS MAY BE ACCOMPLISHED IN ACCORDANCE WITH STATE AND FEDERAL LAW.

2. IN THE EVENT ARCHAEOLOGICAL RESOURCES ARE FOUND TO INCLUDE HUMAN REMAINS, OR IN ANY OTHER CASE WHERE HUMAN REMAINS ARE DISCOVERED DURING CONSTRUCTION, OWNER REPRESENTATIVE AND THE COUNTY CORONER IS TO BE NOTIFIED IN ADDITION TO THE PLANNING DEPARTMENT AND PROJECT ENVIRONMENTAL COORDINATOR SO PROPER DISPOSITION MAY BE ACCOMPLISHED.

PRESERVATION OF MONUMENTS (IF FOUND)

1. ESTABLISH THE LOCATION AND CHARACTER OF ANY PROPERTY CORNER OR CENTERLINE MONUMENTS WITHIN THE AREA OF WORK. THIS WORK SHALL BE PERFORMED BY A PERSON LICENSED TO PERFORM SURVEYING IN THE STATE OF CALIFORNIA. PREPARE AND FILE FOR RECORDATION THE APPROPRIATE CORNER RECORD OR RECORD OF SURVEY.

2. PROVIDE A MINIMUM OF TEN WORKING DAYS NOTICE TO THE PROJECT ENGINEER/SURVEYOR PRIOR TO DISTURBANCE OR REMOVAL OF EXISTING MONUMENTS.

3. RE-ESTABLISH ANY CENTERLINE OR PROPERTY CORNER MONUMENTS DISTURBED BY THE CONTRACTOR'S ACTIVITIES. THIS WORK SHALL BE PERFORMED BY A PERSON LICENSED TO PERFORM SURVEYING IN THE STATE OF CALIFORNIA. PROPERTY CORNER AND CENTERLINE MONUMENTS [ARE SHOWN ON THE DRAWINGS] [SHALL BE ASSUMED TO EXIST AT THE INTERSECTION OF ALL PROPERTY LINES AND STREET CENTERLINES SHOWN ON THE DRAWINGS]. PREPARE AND FILE FOR RECORDATION THE APPROPRIATE CORNER RECORD OR RECORD OF SURVEY INDICATING THE REPLACEMENT OF ANY SUCH MONUMENTS.

REPORTS REQUIRED

1. ENGINEER OF RECORD TO PROVIDE A FINAL REPORT STATING THAT THE WORK IS IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED PLANS.

2. ENGINEER OF RECORD TO PROVIDE CONSTRUTION PROGRESS REPORTS AS DETERMINED AT THE PRECONSTRUCTION MEETING. PROGRESS REPORTS TO BE INCLUDED IN THE FINAL REPORT.

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www.wallacegroup.us

REGISTERED PROFESSIONAL ENGINEER
ESAU BLANCO
No. 62853
CIVIL
STATE OF CALIFORNIA

SIGNATURE
5/21/19
DATE SIGNED

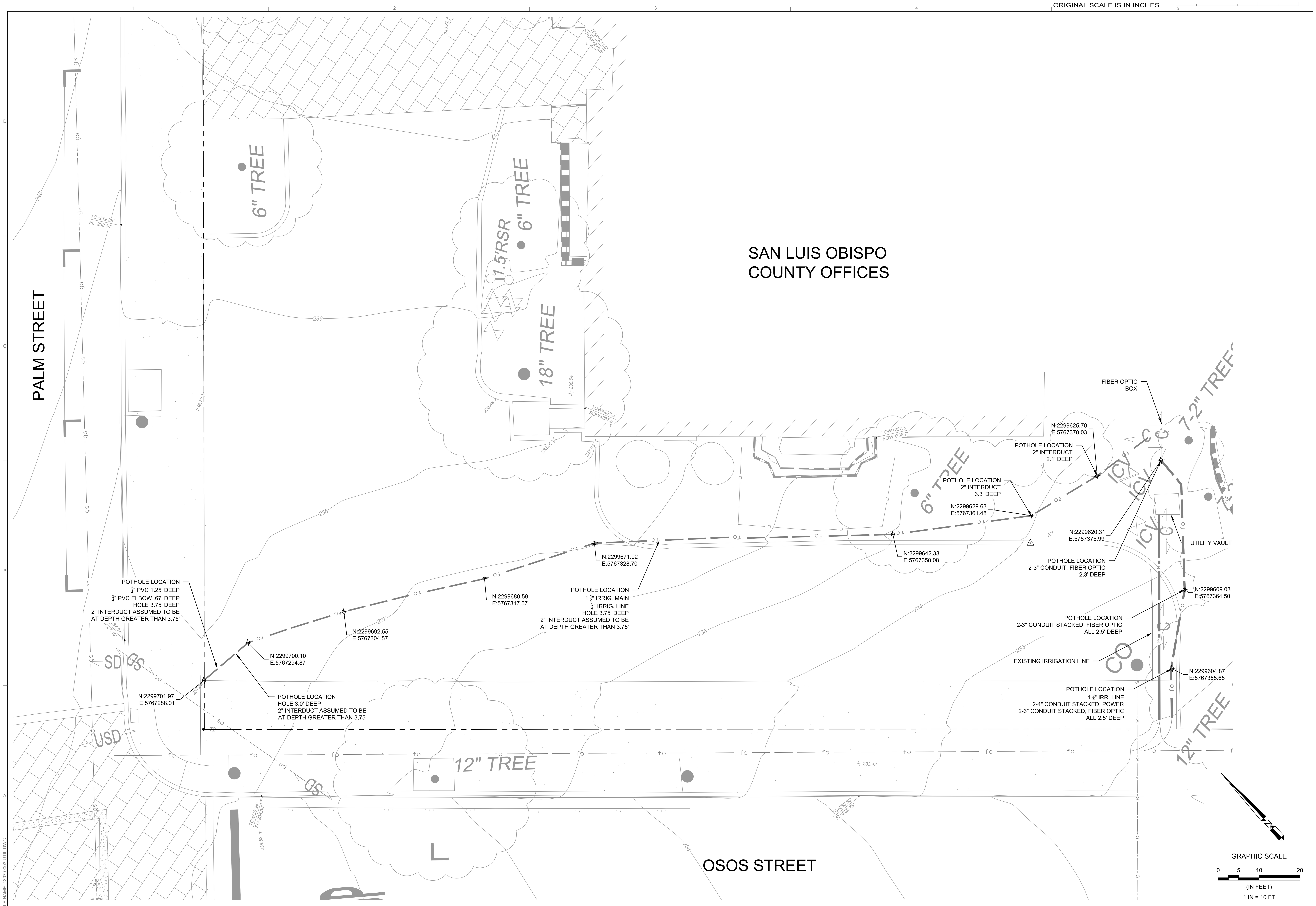
RTA TRANSIT CENTER
GENERAL NOTES
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EB
DRAWN BY: MJH
DATE: 03/15/19

DRAWING NO.
C1.2
2 OF 20 SHEETS

FILE NAME: 1307-0003 LAYT.DWG

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES



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STATE OF CALIFORNIA

SIGNATURE
5/21/19
DATE SIGNED

RTA TRANSIT CENTER
EXISTING UTILITY PLAN
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EB
DRAWN BY: MJH
DATE: 03/15/19

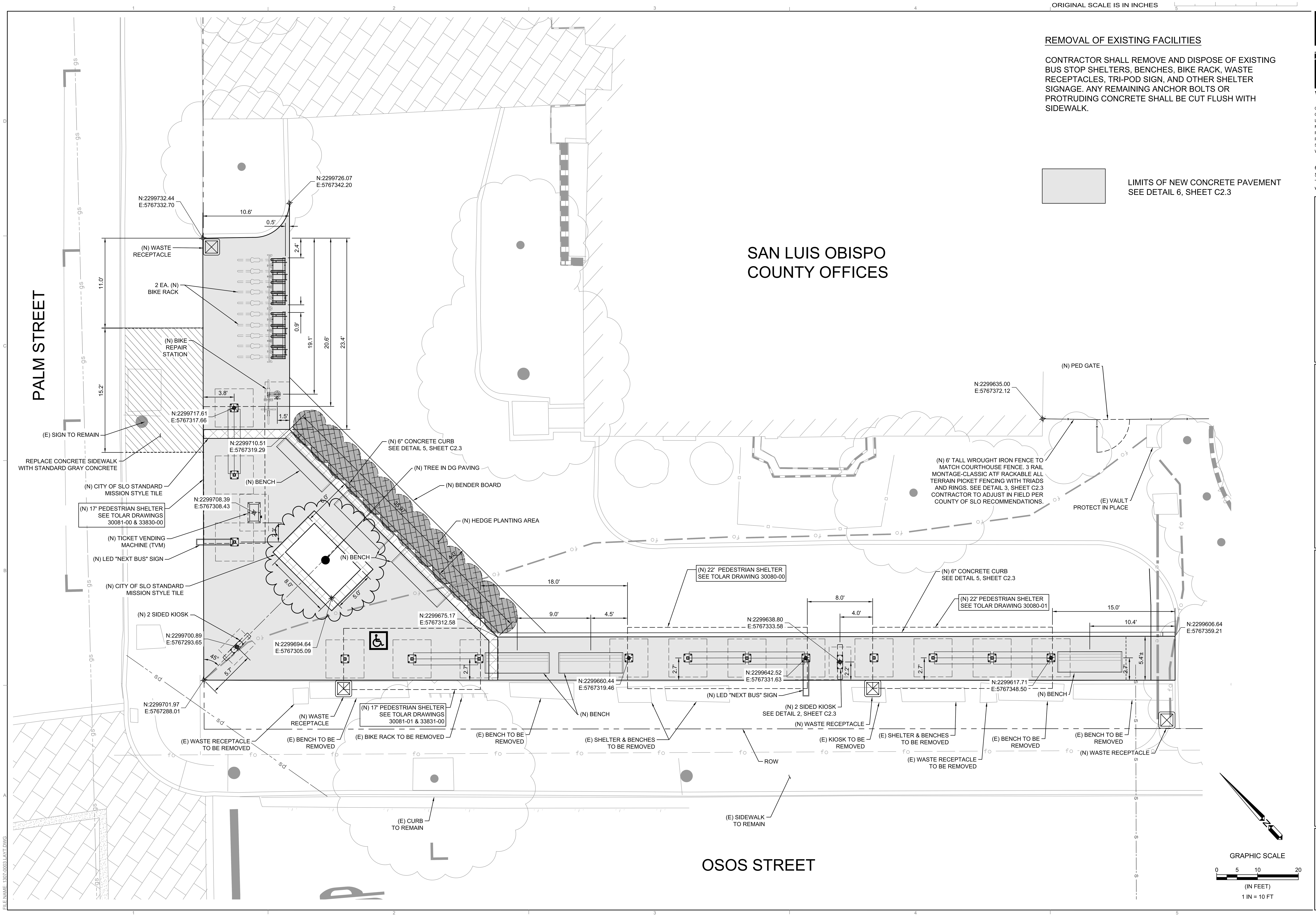
DRAWING NO.
C1.3

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3

REMOVAL OF EXISTING FACILITIES

CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING BUS STOP SHELTERS, BENCHES, BIKE RACK, WASTE RECEPTACLES, TRI-POD SIGN, AND OTHER SHELTER SIGNAGE. ANY REMAINING ANCHOR BOLTS OR PROTRUDING CONCRETE SHALL BE CUT FLUSH WITH SIDEWALK.

LIMITS OF NEW CONCRETE PAVEMENT
SEE DETAIL 6, SHEET C2.3



PALM STREET
OSOS STREET
SAN LUIS OBISPO
COUNTY OFFICES
N:2299732.44
E:5767332.70
N:2299726.07
E:5767342.20
10.6'
0.5'
2.4'
11.0'
0.9'
19.1'
20.6'
23.4'
15.2'
(N) WASTE
RECEPTACLE
2 EA. (N)
BIKE RACK
(N) BIKE
REPAIR
STATION
3.8'
1.5'
N:2299717.61
E:5767317.66
(E) SIGN TO REMAIN
REPLACE CONCRETE SIDEWALK
WITH STANDARD GRAY CONCRETE
N:2299710.51
E:5767319.29
(N) CITY OF SLO STANDARD
MISSION STYLE TILE
(N) BENCH
N:2299708.39
E:5767308.43
(N) 17' PEDESTRIAN SHELTER
SEE TOLAR DRAWINGS
30081-00 & 33830-00
(N) TICKET VENDING
MACHINE (TVM)
(N) LED "NEXT BUS" SIGN
(N) CITY OF SLO STANDARD
MISSION STYLE TILE
(N) 6" CONCRETE CURB
SEE DETAIL 5, SHEET C2.3
(N) TREE IN DG PAVING
(N) BENDER BOARD
(N) HEDGE PLANTING AREA
(N) BENCH
8.0'
5.0'
(N) 2 SIDED KIOSK
N:2299700.89
E:5767293.65
N:2299694.64
E:5767305.09
N:2299675.17
E:5767312.58
45°
5.7'
N:2299701.97
E:5767288.01
18.0'
9.0'
4.5'
2.7'
(N) WASTE
RECEPTACLE
(E) WASTE RECEPTACLE
TO BE REMOVED
(E) BENCH TO BE
REMOVED
(N) 17' PEDESTRIAN SHELTER
SEE TOLAR DRAWINGS
30081-01 & 33831-00
(E) BIKE RACK TO BE REMOVED
(E) BENCH TO BE
REMOVED
(E) CURB
TO REMAIN
(N) 22' PEDESTRIAN SHELTER
SEE TOLAR DRAWING 30080-00
N:2299638.80
E:5767333.58
8.0'
4.0'
N:2299660.44
E:5767319.46
N:2299642.52
E:5767331.63
2.2'
(N) LED "NEXT BUS" SIGN
(N) BENCH
(N) 2 SIDED KIOSK
SEE DETAIL 2, SHEET C2.3
(N) WASTE RECEPTACLE
(E) SHELTER & BENCHES
TO BE REMOVED
(E) KIOSK TO BE
REMOVED
ROW
(E) SIDEWALK
TO REMAIN
(N) 6" CONCRETE CURB
SEE DETAIL 5, SHEET C2.3
(N) 22' PEDESTRIAN SHELTER
SEE TOLAR DRAWING 30080-01
15.0'
10.4'
5.4±
2.7'
N:2299606.64
E:5767359.21
N:2299617.71
E:5767348.50
(N) BENCH
(E) SHELTER & BENCHES
TO BE REMOVED
(E) WASTE RECEPTACLE
TO BE REMOVED
(E) BENCH TO BE
REMOVED
(E) BENCH TO BE
REMOVED
(N) WASTE RECEPTACLE
N:2299635.00
E:5767372.12
(N) PED GATE
(N) 6' TALL WROUGHT IRON FENCE TO
MATCH COURTHOUSE FENCE. 3 RAIL
MONTAGE-CLASSIC ATF RACKABLE ALL
TERRAIN PICKET FENCING WITH TRIADS
AND RINGS. SEE DETAIL 3, SHEET C2.3
CONTRACTOR TO ADJUST IN FIELD PER
COUNTY OF SLO RECOMMENDATIONS.
(E) VAULT
PROTECT IN PLACE
N

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 IN = 10 FT

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SIGNATURE
5/21/19
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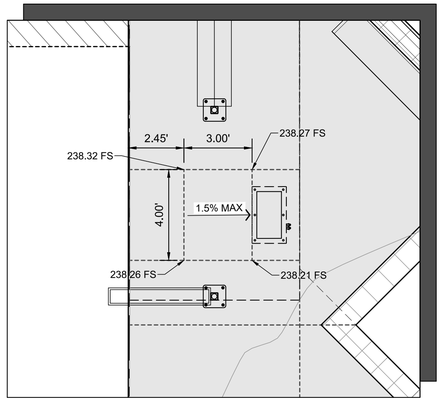
RTA TRANSIT CENTER
LAYOUT-SITE PLAN
SAN LUIS OBISPO, CA

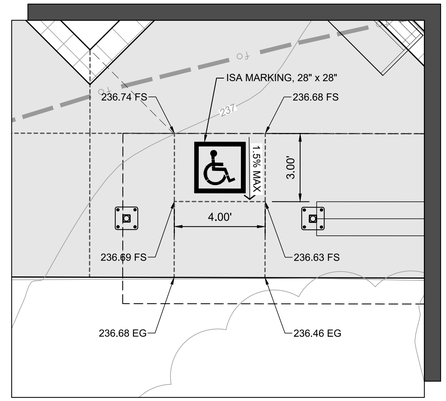
JOB #:	1307-0003
DESIGNERS:	EB
DRAWN BY:	MJH
DATE:	03/15/19

DRAWING NO.
C2.1

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3
5



A TICKET VENDING MACHINE LANDING
Scale: NTS



B WHEELCHAIR ACCESSIBLE ZONE
Scale: NTS

SAN LUIS OBISPO COUNTY OFFICES

GRAPHIC SCALE
0 2.5 5 10
(IN FEET)
1 IN = 5 FT

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SAN LUIS OBISPO, CA 93401
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REGISTERED PROFESSIONAL ENGINEER
ESAU BLANCO
No. 62853
CIVIL
STATE OF CALIFORNIA

SIGNATURE

DATE SIGNED

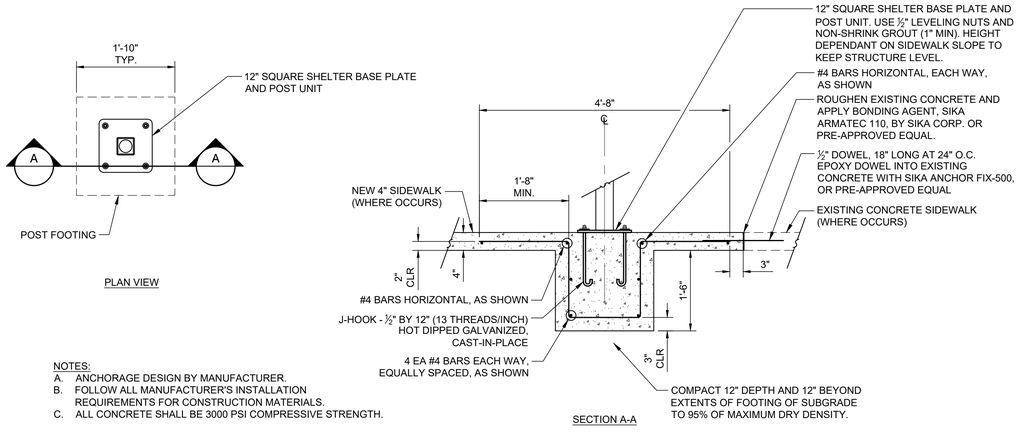
RTA TRANSIT CENTER
GRADING PLAN
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EB
DRAWN BY: MJH
DATE: 03/15/19

DRAWING NO.
C2.2
5 OF 20 SHEETS

FILE NAME: 1307-0003 GRAD.DWG

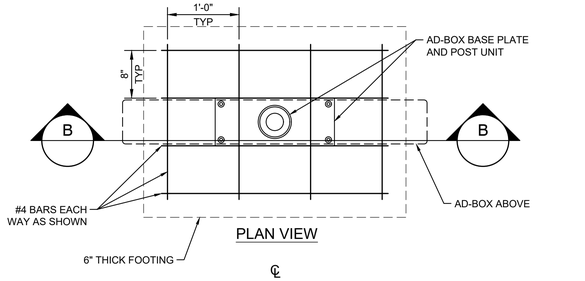
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3
5

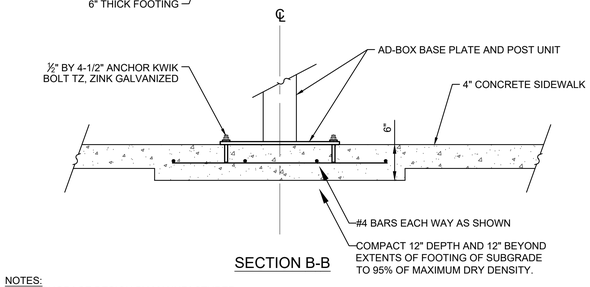


NOTES:
A. ANCHORAGE DESIGN BY MANUFACTURER.
B. FOLLOW ALL MANUFACTURER'S INSTALLATION REQUIREMENTS FOR CONSTRUCTION MATERIALS.
C. ALL CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH.

1 BUS SHELTER FOOTING (PLAN & SECTION)

1/16" = 1'–0" 129314–01

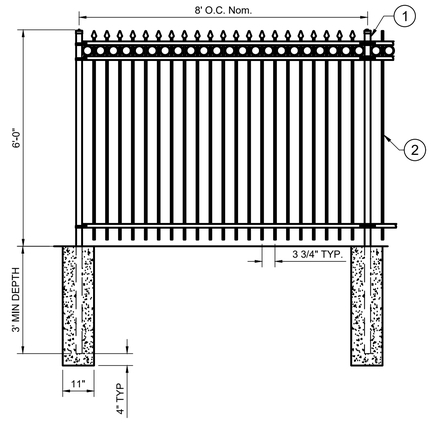


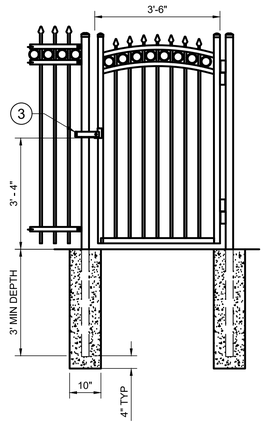


NOTES:
A. ANCHORAGE DESIGN BY MANUFACTURER.
B. FOLLOW ALL MANUFACTURER'S INSTALLATION REQUIREMENTS FOR KWIK BOLT ANCHORING SYSTEMS.
C. ALL CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH.
D. LEVEL BASE PLATE AND PACK WITH NON-SHRINK GROUT

2 2-SIDED KIOSK FOOTING (PLAN & SECTION)

Scale: 1" = 1'-0"



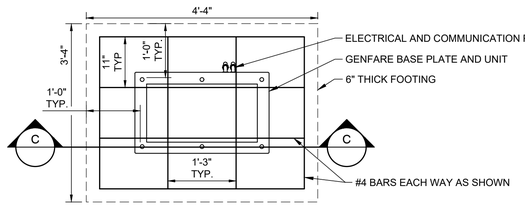


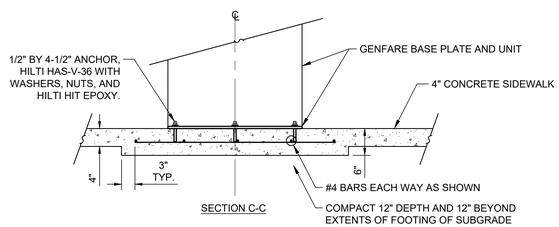
LEGEND:
1. POST 2" DIAM. X 16GA.
2. 5/8" DIAM. 18GA PICKET
3. CONTRACTOR TO PROVIDE LOCKABLE LATCH FOR COUNTY PROVIDED LOCK

NOTES:
A. POST SIZE DEPENDS ON FENCE HEIGHT AND WIND LOADS. SEE MONTAGE SPECIFICATIONS FOR POST SIZING CHART.
B. PROVIDE 3" AIR SPACE FENCE STYLE.
C. MONTAGE PLUS BY AMERISTAR, THREE RAIL FENCE - 6' TALL. SEE WWW.AMERISTARFENCE.COM

3 MONTAGE - CLASSIC PICKET FENCING AND GATE

1/2" = 1'–0" 323118–36





NOTES:
A. ANCHORAGE DESIGN BY MANUFACTURER.
B. PER THE VENDSTAR MANUFACTURER, USE ½" Ø BOLTS.
C. FOLLOW ALL MANUFACTURER'S INSTALLATION REQUIREMENTS FOR HILTI HAS-V-36 ANCHORING SYSTEMS.
D. ALL CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH.
E. LEVEL BASE PLATE AND PACK WITH NON-SHRINK GROUT

4 TVM FOOTING (PLAN & SECTION)

1/16" = 1'–0" 129315–02

GENERAL NOTES:

A. This section is to be used only for parking lots or as approved by the City Engineer.

B. When curb is placed adjacent to existing or future irrigated landscape area, PCC shall extend down as shown for moisture barrier. Any alternate moisture barrier shall be approved by the City.

C. When curb is *not* located as in Note B, depth may be reduced.

D. Expansion joints shall be placed at corners, BC's and EC's, and at 33 feet maximum spacing.

E. See Engineering Standard 4110 for notes regarding required pavement removal and repair.

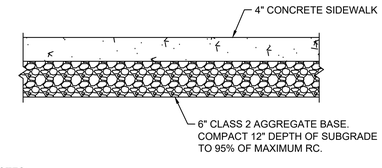
REVISIONS	BY	APP	DATE
Allow Class 2R Base	*DVB*	*BL*	*11-08*
Revise rebar specs	*JDL*	*WAP*	*11-98*
Drafting edits	*JDL*	*MH*	*10-12*
STANDARD CURRENT AS OF:		May 2018	

CURB

4020

5 MODIFIED CONCRETE CURB DETAIL

NTS



NOTES:
A. SIDEWALK SHALL BE DOWELED IN TO EXISTING SIDEWALK WITH #4 x 18" SMOOTH BARS AT 24" O.C. ONE END TO BE SLEEVED OR GREASED.
B. FINISH: PCC SIDEWALK SHALL BE GIVEN A SALT FINISH TO MATCH CITY OF SAN LUIS OBISPO MISSION STYLE STANDARD DRAWING 4220.
C. COLOR: CITY OF SAN LUIS OBISPO MISSION STYLE INTEGRAL COLOR.
D. SEAL AND CURE: APPLY CURING COMPOUND IN COMPLIANCE WITH SECTION 73-1.03F OF THE CITY OF SAN LUIS OBISPO STANDARD SPECIFICATIONS
E. EXPANSION JOINTS: ¼" EXPANSION MATERIAL SHALL BE PLACED AT 100' INTERVALS
F. WEAKENED PLANE JOINTS: PLASTIC PULLTOP QUICKJOINT STRIPS, OR APPROVED EQUAL, SHALL BE AT 20' O.C. AND 1 ½" DEEP
G. SCORE MARKS: SIDEWALKS SHALL BE SCORED AT LEAST ¼" DEEP, PERPENDICULAR TO THE CURB FACE AT 5' INTERVALS
H. SEE GENERAL CONCRETE NOTES, SHEET C1.0 FOR INFORMATION NOT SHOWN

6 CONCRETE SIDEWALK

NTS

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REGISTERED PROFESSIONAL ENGINEER
ES&U BLANCO
No. 62853
CIVIL
STATE OF CALIFORNIA

SIGNATURE
5/21/19
DATE SIGNED

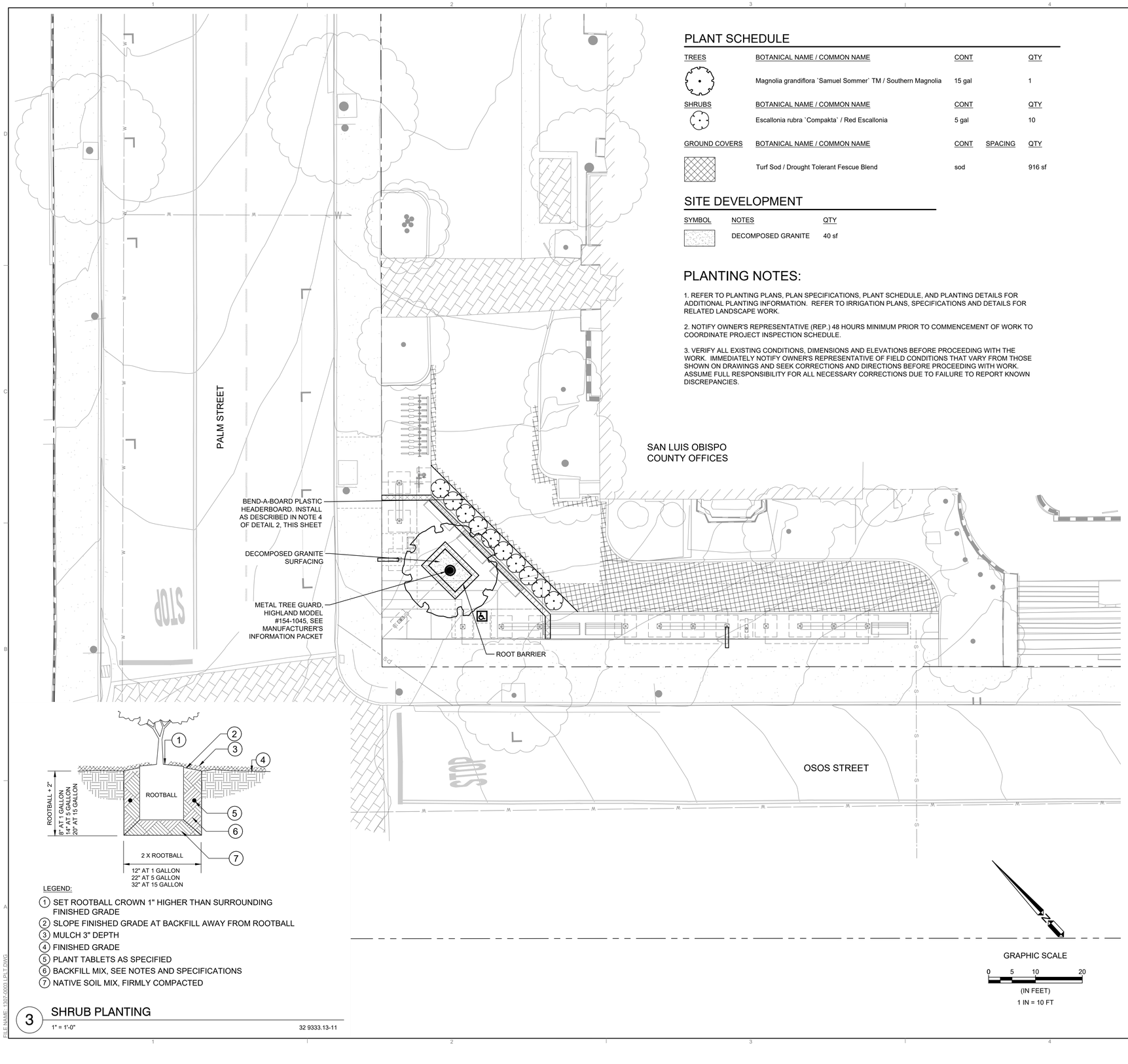
RTA TRANSIT CENTER
SHELTER & FURNISHING DETAILS
SAN LUIS OBISPO, CA

JOB #:	1307-0003
DESIGNERS:	EB
DRAWN BY:	MJH
DATE:	03/15/19

DRAWING NO.
C2.3
6 OF 20 SHEETS

FILE NAME: 1307-0003 LAYT.DWG

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3



PLANT SCHEDULE

TREES	BOTANICAL NAME / COMMON NAME	CONT	QTY
	Magnolia grandiflora `Samuel Sommer` TM / Southern Magnolia	15 gal	1
SHRUBS	**BOTANICAL NAME / COMMON NAME**	**CONT**	**QTY**
	Escallonia rubra `Compakta` / Red Escallonia	5 gal	10
GROUND COVERS	**BOTANICAL NAME / COMMON NAME**	**CONT SPACING**	**QTY**
	Turf Sod / Drought Tolerant Fescue Blend	sod	916 sf

SITE DEVELOPMENT

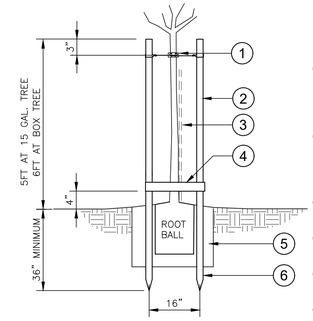
SYMBOL	NOTES	QTY
	DECOMPOSED GRANITE	40 sf

PLANTING NOTES:

1. REFER TO PLANTING PLANS, PLAN SPECIFICATIONS, PLANT SCHEDULE, AND PLANTING DETAILS FOR ADDITIONAL PLANTING INFORMATION. REFER TO IRRIGATION PLANS, SPECIFICATIONS AND DETAILS FOR RELATED LANDSCAPE WORK.

2. NOTIFY OWNER'S REPRESENTATIVE (REP.) 48 HOURS MINIMUM PRIOR TO COMMENCEMENT OF WORK TO COORDINATE PROJECT INSPECTION SCHEDULE.

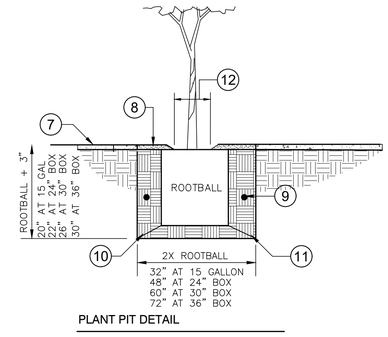
3. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS BEFORE PROCEEDING WITH THE WORK. IMMEDIATELY NOTIFY OWNER'S REPRESENTATIVE OF FIELD CONDITIONS THAT VARY FROM THOSE SHOWN ON DRAWINGS AND SEEK CORRECTIONS AND DIRECTIONS BEFORE PROCEEDING WITH WORK. ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY CORRECTIONS DUE TO FAILURE TO REPORT KNOWN DISCREPANCIES.



STAKING DETAIL

LEGEND

1. DOUBLE STAKE WITH WIRE: #12 GALVANIZED WIRE THROUGH THE EYE OF "CINCH-TIE" RUBBER SUPPORT
2. 2" DIAMETER LODGEPOLE PINE TREATED TREE STAKES. SET PERPENDICULAR TO PREVAILING WIND
3. REMOVE NURSERY STAKE BY THE END OF MAINTENANCE
4. 1X3 CROSSTIE, AVOID RUBBING INJURY TO TRUNK
5. BACKFILL PLANTING AS PER PLANTING DETAIL
6. AVOID DAMAGE TO THE ROOT BALL WITH THE SUPPORT STAKES



PLANT PIT DETAIL

LEGEND

7. FINISHED GRADE AT CONCRETE
8. DECOMPOSED GRANITE.
9. PLANT TABLETS AS NOTED OR SPECIFIED
10. BACKFILL MIX, SEE NOTES AND SPECIFICATIONS
11. NATIVE SOIL MIX FIRMLY COMPACTED
12. KEEP DG 6"-8" FROM BASE OF TREE

1 TREE PLANTING DOUBLE STAKE

1" = 1'-0" 329343.19-21

LEGEND

1. FINISH SURFACE
2. DECOMPOSED GRANITE, 1/4" DIAM. MINUS, COMPACTED 80%
3. COMPACTED SUB-GRADE
4. 2" X 4" BEND-A-BOARD PLASTIC HEADERBOARD, STAKES @ 18" O.C.
5. PLANTING BED
6. LANDSCAPE TARP FOR WEED CONTROL
7. CONCRETE PAVEMENT, SEE RESPECTIVE DETAIL

NOTES:

A. SLOPE SURFACE PER DRAINAGE PATTERN SHOWN ON CIVIL GRADING PLAN BY OTHERS
B. REFER TO SPECIFICATIONS FOR COLOR

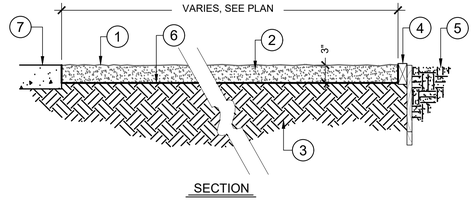
LEGEND:

1. SET ROOTBALL CROWN 1" HIGHER THAN SURROUNDING FINISHED GRADE
2. SLOPE FINISHED GRADE AT BACKFILL AWAY FROM ROOTBALL
3. MULCH 3" DEPTH
4. FINISHED GRADE
5. PLANT TABLETS AS SPECIFIED
6. BACKFILL MIX, SEE NOTES AND SPECIFICATIONS
7. NATIVE SOIL MIX, FIRMLY COMPACTED

3 SHRUB PLANTING

1" = 1'-0" 32 9333.13-11

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 IN = 10 FT



2 DECOMPOSED GRANITE SURFACING

1" = 1'-0" 32 1516-18

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REGISTERED LANDSCAPE ARCHITECT
LIC. #4038
ANN SEVER
(SIGNATURE)
STATE OF CALIFORNIA

SIGNATURE

DATE SIGNED

RTA TRANSIT CENTER
PLANTING PLAN & DETAILS
SAN LUIS OBISPO, CA

JOB #:	1307-0003
DESIGNERS:	EAS
DRAWN BY:	EAS
DATE:	03/15/19

DRAWING NO.
P1.0
7 OF 20 SHEETS

FILE NAME: 1307-0003 LPLT.DWG

SECTION 32 93 00
PLANTING

PART 1 - GENERAL

1.1 PRINCIPAL WORK IN THIS SECTION

A. OWNER'S GENERAL REQUIREMENTS FOR CONTRACT SPECIFICATIONS APPLY TO WORK IN THIS SECTION.

B. COORDINATE THE WORK OF THIS SECTION WITH RELATED TRADES.

C. VERIFY APPLICABLE EXTENTS OF WORK AND DIMENSIONS AT THE JOBSITE.

D. PLANTING WORK: FURNISH ALL LABOR, MATERIAL, EQUIPMENT AND SERVICES NECESSARY TO PROVIDE AND INSTALL ALL LANDSCAPE PLANTING, COMPLETE IN PLACE, AS SHOWN AND SPECIFIED UNDER THIS SECTION, INCLUDING, BUT NOT BE LIMITED TO:

1. LANDSCAPE FINISH GRADING
2. SOIL PREPARATION
3. TREE SUPPORTS AND REQUIRED PLANTING ACCESSORIES
4. PLANTING TREES AS INDICATED
5. SOIL AMENDMENTS, FERTILIZER, PLANTING SOIL MIXES AND OTHER MATERIAL AS REQUIRED OR INDICATED
6. INSTALLING SOD LAWN
7. TOPDRESSING
8. POST-PLANTING & PRE-APPROVAL WATERING AND MAINTENANCE
9. WORK SCHEDULING AND OBSERVATION SCHEDULING
10. CLEAN UP

1.2 QUALITY ASSURANCE

E. LANDSCAPE CONTRACTOR'S QUALIFICATIONS: A QUALIFIED LICENSED LANDSCAPE CONTRACTOR WHOSE WORK HAS RESULTED IN SUCCESSFUL ESTABLISHMENT OF LANDSCAPE PLANTINGS.

1. FIELD SUPERVISION: MAINTAIN AN EXPERIENCED FULL-TIME SUPERVISOR ON PROJECT SITE FOR THE DURATION OF ALL WORK IN THIS SECTION.
2. INSTALLERS: PROVIDE SKILLED WORKMEN IN ADEQUATE NUMBERS, TRAINED AND EXPERIENCED IN THE CRAFTS AND METHODS REQUIRED FOR THE WORK IN THIS SECTION.

B. SOIL-TESTING LABORATORY QUALIFICATIONS: AN INDEPENDENT LABORATORY, RECOGNIZED BY THE CALIFORNIA STATE DEPARTMENT OF AGRICULTURE, WITH THE EXPERIENCE AND CAPABILITY TO CONDUCT THE TESTING INDICATED AND THAT SPECIALIZES IN THE TYPES OF TESTS TO BE PERFORMED.

3. SOIL ANALYSIS: ANALYSIS SHALL INCLUDE FERTILITY, AGRICULTURAL SUITABILITY, PARTICLE SIZE ANALYSIS AND FERTILIZER RECOMMENDATIONS. A05 SOIL TEST AS PERFORMED BY SOIL AND PLANT LABORATORY, INC., P.O. BOX 153, SANTA CLARA, CA 95052-0330, (408) 727-0330 OR AN APPROVED EQUAL LABORATORY FOR AGRICULTURAL SUITABILITY SOIL TESTING REPORT.
4. ALL STOCKPILED TOPSOIL SHALL BE TESTED FOR AGRICULTURAL SUITABILITY FOR USE IN PLANTING MIXES AND FOR USE AS PLANTING BED SOIL OVER SUBGRADES.

C. PLANTING WORK SHALL COMPLY WITH SAN LUIS OBISPO CITY PUBLIC WORKS STANDARD DRAWINGS AND SPECIFICATIONS, UNLESS OTHERWISE APPROVED BY SAN LUIS OBISPO CITY PUBLIC WORKS DEPARTMENT.

D. PROVIDE QUALITY, SIZE, GENUS, SPECIES, AND VARIETY OF PLANTS INDICATED, COMPLYING WITH APPLICABLE REQUIREMENTS IN ANSI Z60.1, "AMERICAN STANDARD FOR NURSERY STOCK."

E. TREE MEASUREMENTS: MEASURE ACCORDING TO ANSI Z60.1 WITH BRANCHES AND TRUNKS OR CANES IN THEIR NORMAL POSITION. DO NOT PRUNE TO OBTAIN REQUIRED SIZES PRIOR TO DELIVERY. TAKE CALIPER MEASUREMENTS 6 INCHES ABOVE GROUND FOR TREES UP TO 4-INCH CALIPER SIZE, AND 12 INCHES ABOVE GROUND FOR LARGER SIZES. MEASURE MAIN BODY OF TREE OR SHRUB FOR HEIGHT AND SPREAD; DO NOT MEASURE BRANCHES OR ROOTS TIP-TO-TIP.

F. OBSERVATION: OWNER'S REPRESENTATIVE MAY EXAMINE TREES, EITHER AT PLACE OF GROWTH OR AT SITE BEFORE PLANTING, FOR COMPLIANCE WITH REQUIREMENTS FOR GENUS, SPECIES, VARIETY, SIZE, AND QUALITY. OWNER'S REPRESENTATIVE RETAINS RIGHT TO OBSERVE TREES FURTHER FOR SIZE AND CONDITION OF ROOT SYSTEMS, INSECTS AND DISEASES, INJURIES, AND LATENT DEFECTS, AND TO REJECT UNSATISFACTORY OR DEFECTIVE MATERIAL AT ANY TIME DURING PROGRESS OF WORK. REMOVE REJECTED TREES IMMEDIATELY FROM PROJECT SITE.

1. NOTIFY OWNER'S REPRESENTATIVE OF SOURCES OF PLANTING MATERIALS TEN DAYS IN ADVANCE OF DELIVERY TO SITE.

I. PRE-INSTALLATION INSPECTION: NOTIFY OWNER'S REPRESENTATIVE OF SCHEDULE OF PLANTING AND IN-GROUND INSTALLATION FOR A “PRE-INSTALLATION INSPECTION”. PLANTS IN CONTAINERS SHALL BE PLACED ON TOP OF PLANTING SOIL IN THE SPOTS WHERE INSTALLATION WILL TAKE PLACE FOR APPROVAL AND ANY NECESSARY ADJUSTMENTS.

1.3 DEFINITIONS

A. CONTAINER-GROWN STOCK: HEALTHY, VIGOROUS, WELL-ROOTED EXTERIOR PLANTS GROWN IN A CONTAINER WITH 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 KIND, TYPE, AND SIZE OF EXTERIOR PLANT REQUIRED.

B. FINISH GRADE: ELEVATION OF FINISHED SURFACE OF PLANTING SOIL.

C. OWNER'S REPRESENTATIVE: OWNER-APPOINTED PERSON WHO ACTS ON THE OWNER'S BEST INTEREST TO ENSURE HIGH PERFORMANCE AND ADHERENCE TO CONTRACT DOCUMENT REQUIREMENTS, AND WHO MAY BE AN ARCHITECT, LANDSCAPE ARCHITECT, OR OTHER AGENT.

D. PLANTING SOIL: NATIVE TOPSOIL OR SURFACE SOIL MODIFIED TO BECOME SUITABLE FOR PLANTING USE; MIXED WITH APPROPRIATE SOIL AMENDMENTS, ALSO REFERRED TO AS SOIL MIX.

E. SUBGRADE: SURFACE OR ELEVATION OF SUBSOIL REMAINING AFTER COMPLETING EXCAVATION, OR TOP SURFACE OF A FILL OR BACKFILL, BEFORE PLACING PLANTING SOIL.

1.4 SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF NON-PLANT PRODUCT INDICATED.

B. SAMPLES FOR VERIFICATION: FOR EACH OF THE FOLLOWING:

1. 5 LB EACH OF ORGANIC MULCH IN LABELED PLASTIC BAGS.
2. FERTILIZERS, ONE SMALL PACKAGE IN MANUFACTURER'S PACKAGING OF EACH TYPE.
3. SOIL AMENDMENTS.
4. GRAVEL, SAND, AND DECOMPOSED GRANITE

C. PRODUCT CERTIFICATES: FOR EACH TYPE OF MANUFACTURED PRODUCT, SIGNED BY PRODUCT MANUFACTURER, AND COMPLYING WITH THE FOLLOWING:

1. MANUFACTURER'S CERTIFIED ANALYSIS FOR 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.

D. QUALIFICATION DATA: PROOF OF CURRENT CALIFORNIA LANDSCAPE CONTRACTOR'S LICENSE AND OTHER REQUIRED DOCUMENTS.

E. WARRANTIES: PROVIDE ONE COPY EACH OF APPLICABLE WARRANTIES FOR WORK AND MATERIAL AT TIME OF FINAL APPROVAL.

F. PLANTING SCHEDULE: TWO COPIES OF PLANTING SCHEDULE INDICATING ANTICIPATED DELIVERY AND PLANTING DATES, COORDINATED WITH OVERALL PROJECT SCHEDULE

G. MAINTENANCE GUIDE: PROVIDE TO OWNER TWO COPIES EACH OF TYPEWRITTEN INSTRUCTIONS AND A SCHEDULE FOR THE MAINTENANCE OF PLANTS IN THIS SECTION THROUGH A CALENDAR YEAR, BASED ON STANDARD HORTICULTURAL PRACTICES AS PRESCRIBED BY *ARBORICULTURE,* 4TH EDITION (2004), BY HARRIS, CLARK, & MATHENY. THE GUIDE SHALL INCLUDE PRUNING, CULTIVATING, WATERING, WEEDING, FERTILIZING, TIGHTENING AND REPAIRING STAKES, RESTORING FINISH GRADES AND DRAINAGE, AND ANY OTHER MAINTENANCE ASPECTS REQUIRED BY THE PLANTS. SUBMIT GUIDE BEFORE EXPIRATION OF REQUIRED MAINTENANCE PERIOD.

1.5 DELIVERY, STORAGE, AND HANDLING

A. DO NOT PRUNE TREES BEFORE DELIVERY, EXCEPT AS APPROVED BY OWNER'S REPRESENTATIVE. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF EXTERIOR PLANTS DURING DELIVERY. DO NOT DROP EXTERIOR PLANTS DURING DELIVERY.

B. HANDLE PLANTING STOCK BY THE CONTAINER AND ROOTBALL. DO NOT GRAB PLANTS ONLY BY THE TRUNK FOR CARRYING AND PLACEMENT.

C. DELIVERY SCHEDULE: UNLESS THERE IS A DESIGNATED HOLDING AREA FOR LANDSCAPE PLANTS WHERE THE MATERIAL CAN BE SAFELY KEPT AND MAINTAINED, SCHEDULE DELIVERY OF PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED. IF PLANTING IS DELAYED MORE THAN SIX HOURS AFTER DELIVERY, SET PLANTS IN APPROVED SHADE AREA, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.

1. TRANSPORT PLANTS UNDER PROTECTIVE COVER AND ENCLOSURE. PLANTS TRANSPORTED IN OPEN BED TRUCKS WILL BE REJECTED.
2. DO NOT REMOVE CONTAINER-GROWN STOCK FROM CONTAINERS BEFORE TIME OF PLANTING.
3. WATER ROOT SYSTEMS OF PLANTS STORED ON-SITE WITH A FINE-MIST SPRAY. WATER AS OFTEN AS NECESSARY TO MAINTAIN ROOT SYSTEMS IN A MOIST CONDITION.

1.6 COORDINATION

A. COORDINATE WITH OTHER WORKS IN CONTRACT, INCLUDING BUT NOT LIMITED TO:

1. IRRIGATION SYSTEM: PLANTING WORK SHALL PROCEED ONLY AFTER TESTING AND APPROVAL OF THE IRRIGATION SYSTEM.
2. PAVING AND OTHER CONSTRUCTION WORK: COORDINATE PLANTING AREA REQUIREMENTS WITH PAVING WORK, INCLUDING SITE SIGNAGE AND LIGHTING; IRRIGATION SLEEVING, PIPING AND WIRING; LANDSCAPE DRAINAGE AND RELATED WORK.
3. ELECTRICAL: COORDINATE ELECTRICAL REQUIREMENTS FOR LIGHTING, SIGNAGE, AND IRRIGATION.
4. DRAINAGE: COORDINATE AREA DRAINS AND UNDERGROUND DRAIN PIPES WITH PLANTING WORK.

1.7 WARRANTY

A. PLANT WARRANTY: WARRANT THE PLANTS FOR THE WARRANTY PERIODS INDICATED AGAINST DEFECTS, INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT, OR ABUSE BY OWNER, OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL.

1. WARRANTY PERIOD FOR TREES: ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
2. WARRANTY PERIOD FOR SOD: SIX MONTHS FROM DATE OF SUBSTANTIAL COMPLETION.

B. REMOVE DEAD PLANTS IMMEDIATELY. REPLACE IMMEDIATELY WITH PLANTS OF THE SAME SPECIES AND SIZE IN ACCEPTABLE CONDITION.

C. REPLACE PLANTS THAT ARE DEAD, MORE THAN 25 PERCENT DEAD, OR IN AN UNHEALTHY CONDITION AT END OF WARRANTY PERIOD.

D. REPLACE SOD UNDER WARRANTY WHENEVER AN AREA HAS BROWNED ONLY AFTER THE CAUSE OF DAMAGE HAS BEEN CORRECTED.

PART 2 - PRODUCTS

2.1 GENERAL

A. COMMERCIALLY PROCESSED OR PACKAGED MATERIAL FOR ACTUAL PLANTING WORK SHALL BE DELIVERED IN ORIGINAL UNOPENED PACKAGING, BEARING THE MANUFACTURER'S GUARANTEED ANALYSIS. SUBMIT SAMPLES FOR APPROVAL.

2.2 TREE AND SHRUB MATERIAL

A. GENERAL: FURNISH NURSERY CONTAINER-GROWN TREES COMPLYING WITH ANSI Z60.1, WITH HEALTHY ROOT SYSTEMS DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL-SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.

B. GRADE: PROVIDE TREES AND SHRUBS OF SIZES AND GRADES COMPLYING WITH ANSI Z60.1 FOR TYPE OF TREES REQUIRED.

1. PLANTS OF A LARGER SIZE MAY BE USED IF ACCEPTABLE TO OWNER'S REPRESENTATIVE, WITH A PROPORTIONATE INCREASE IN SIZE OF ROOTS OR BALLS.
2. PLANTS OF THE SAME BOTANICAL NAME AND CONTAINER SIZE SHALL BE MATCHING IN FORM AND SIZE.

C. LABEL EACH PLANT WITH SECURELY ATTACHED, WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANICAL AND COMMON NAME.

2.3 TREES

A. STANDARD TREES: SINGLE-STEM TREES WITH STRAIGHT TRUNK, WELL-BALANCED CROWN, AND INTACT LEADER, OF MINIMUM OR LARGER HEIGHT AND CALIPER INDICATED, COMPLYING WITH ANSI Z60.1 FOR TYPE OF TREES REQUIRED.

1. PROVIDE CONTAINER-GROWN TREES.
2. BRANCHING HEIGHT: FOR STREET TREES, ONE-HALF OF TREE HEIGHT.
3. FORM: BRANCHED OR PRUNED NATURALLY WHILE GROWING IN THE NURSERY ACCORDING TO SPECIES AND TYPE, WITH RELATIONSHIP OF CALIPER, HEIGHT, AND BRANCHING ACCORDING TO ANSI Z60.1.

2.4 SOD

A. TYPE: NURSERY-GROWN SOD OF TALL FESCUE WITH WELL DEVELOPED ROOT SYSTEM, SUITED TO LOCAL CLIMATE. SUBMIT NURSERY CERTIFICATE FOR APPROVAL PRIOR TO DELIVERY.

B. SOD SHALL BE GRADE A NEW CROP, UNIFORMLY DENSE AND GREEN, DISEASE AND WEED FREE, FIELD GROWN ON FUMIGATED SOIL FOR AT LEAST 1 YEAR AND ACCOMPANIED BY GROWER'S GUARANTEED SEED MIX ANALYSIS, GERMINATION RATE AND PURITY RATE.

C. GROWING MEDIUM: SOD SHALL BE GROWN IN A PREDOMINANTLY SANDY LOAM MEDIUM, NON-NETTED.

D. HARVEST AND DELIVERY:

1. HARVESTED AND DELIVERED IN ROLLS WITH THE SOIL SIDE OUT.
2. FOR LAWNS, CUT AT 1-1/2 INCHES DEEP. SOD SHALL BE CUT AND DELIVERED WITHIN 24 HOURS OF INSTALLATION.
3. COVER AND PROTECT SOD ROLLS FROM DRYING OUT DURING TRANSIT AND WHILE WAITING FOR INSTALLATION.

2.5 TOPSOIL

A. TOPSOIL: SANDY LOAM TO LOAM WITH PH RANGE OF 6.5 TO 7.5, ECE LESS THAN 2, SAR LESS THAN 4 AND BORON LESS THAN 0.7 PPM, A MINIMUM OF 2% ORGANIC MATERIAL CONTENT; FREE OF STONES 1-INCH OR LARGER IN ANY DIMENSION AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH.

1. TOPSOIL SOURCE: USE EXISTING IN-PLACE SURFACE SOIL OR STOCK-PILED TOPSOIL TO PRODUCE TOPSOIL ONLY IF RECOMMENDED BY LABORATORY SOIL REPORT. VERIFY AGRICULTURAL SUITABILITY OF SURFACE SOIL AND STOCK-PILED TOPSOIL BY SOIL TESTING LABORATORY AS SPECIFIED.
   a. ONE SAMPLE OF SITE SOIL TAKEN TO THE DEPTH OF 6 INCHES FROM TWO PLANTING AREAS AS DESIGNATED BY THE OWNER'S REPRESENTATIVE SHALL BE ANALYZED BY THE LABORATORY FOR THE SOIL REPORT.
2. REMOVE FROM SURFACE SOIL ROOTS, PLANTS, SOD, STONES, CLAY LUMPS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH.
3. SURFACE SOIL MAY BE SUPPLEMENTED WITH IMPORTED OR MANUFACTURED TOPSOIL FROM OFF-SITE SOURCES.

2.6 TOPSOIL AMENDMENTS

A. ORGANIC AMENDMENT: DECOMPOSED, NITROGEN-TREATED SAWDUST OR GROUND BARK; OF UNIFORM TEXTURE, FREE OF CHIPS, STONES, STICKS, SOIL OR TOXIC MATERIAL, AS RECOMMENDED BY SOIL REPORT. SUBMIT SAMPLE TO OWNER'S REPRESENTATIVE FOR APPROVAL.

2.7 FERTILIZER

A. FERTILIZER FOR TOPSOIL: SUPPLY GRANULAR COMMERCIAL FERTILIZER WITH NPK 6-20-20 WITH TRACE MINERALS BY BEST OR APPROVED EQUAL, OR ANOTHER COMMERCIAL FERTILIZER WITH THE REQUIREMENTS AS RECOMMENDED BY SOIL REPORT.

B. FERTILIZER TABLETS FOR PLANT PITS: SLOW-RELEASE 20-10-5 TABLETS, 21 GRAM SIZE, AS MANUFACTURED BY AGRIFORM OR APPROVED EQUAL.

2.8 MULCH

A. ORGANIC MULCH: FREE OF DELETERIOUS MATERIALS AND SUITABLE AS A TOP DRESSING FOR SHRUBS AND PLANTING BEDS, CONSISTING OF ONE OF THE FOLLOWING:

1. TYPE: WOOD CHIPS OF GROUND OR SHREDDED BARK. LEAF AND TWIGS ARE NOT ACCEPTABLE.

2.9 TREE STAKES

A. STAKES: LODGE POLE PINE STAKES, 2 INCHES DIAMETER, 10 FEET LONG, TAPERED ONE END.

B. TREE TIES: STRAP TYPE WITH ONE TAPERED END AND ONE TUBE END, OF VIRGIN FLEXIBLE VINYL, MEETING TENSILE AND ELONGATION STRENGTH PER ASTM-D-412 STANDARDS; CINCH TIE AS MANUFACTURED BY VIT PRODUCTS, INC. OR APPROVED EQUAL.

2.10 ROOT BARRIER MATERIAL

A. PROVIDE ROOT BARRIER PRODUCTS TO PREVENT TREE ROOTS FROM UP-LIFTING PAVEMENTS, FOUNDATIONS, AND STRUCTURES, AND TO DIRECT ROOTS DOWNWARD INTO DEEPER SOIL. ROOT BARRIER SHALL BE INSTALLED AROUND TREES PLANTED WITHIN 5 FEET OF ANY PAVEMENT, WALLS AND FOUNDATIONS.

1. MATERIAL: CO-POLYMER POLYPROPYLENE PLASTIC WITH 50% POST CONSUMER RECYCLED MATERIAL OF THE SAME, WITH UV INHIBITORS, WALL THICKNESS 0.08 INCH MINIMUM, IN BLACK COLOR.
2. FORMS: BARRIER SHALL BE IN PANELS THAT INTERLOCK TO SURROUND THE ROOTBALL.
   a. PANELS: 24 INCHES HIGH BY 24 INCHES WIDE, WITH DOUBLE TOP EDGE, INTERIOR VERTICAL ROOT-DIRECTING AND STIFFENING RIBS AT 6 INCHES SPACING, INTERIOR ANTI-LIFT GROUND LOCK PADS, AND INTERLOCKING SEAMS FOR PANEL CONNECTION.

B. MANUFACTURER: DEEPROOT PARTNERS, L.P., 800-458-7668

2.11 METAL TREE GUARD

C. PROVIDE METAL TREE GUARD TO PROTECT TREE FROM PEDESTRIAN TRAFFIC. METAL TREE GUARD SHALL BE INSTALLED AROUND TREE.

1. MATERIAL: A36 GRADE STEEL POWDER COATED WITH BLACK COLOR.
2. SIZE: 20" DIAMETER BY 48 INCHES TALL, PLUS 4 - 6" DEEP SPIKES

D. MANUFACTURER: HIGHLAND PRODUCT GROUP LLC, (561) 620-7878

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE AREAS TO RECEIVE PLANTS FOR COMPLIANCE WITH REQUIREMENTS AND CONDITIONS AFFECTING INSTALLATION AND PERFORMANCE. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

B. FLAG UNDERGROUND STRUCTURES AND UTILITIES AND PROTECT FROM DAMAGE DURING PLANTING OPERATIONS.

C. PLANTING WORK SHALL PROCEED ONLY AFTER TESTING AND APPROVAL OF THE IRRIGATION SYSTEM.

3.2 PREPARATION

A. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES, AND EXISTING EXTERIOR PLANTS FROM DAMAGE BY PLANTING OPERATIONS.

B. PROVIDE 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.

3.3 PREPLANTING SOIL PREPARATION

A. LOOSEN SUBGRADE OF PLANTING BEDS TO A MINIMUM DEPTH OF 6 INCHES. 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.

B. TURF PLANTING BED PREPARATION:

1. PREPARE SUBGRADE OF TURF AREAS TO ALLOW FOR 6 INCHES OF TOPSOIL MIX. 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.
2. APPLY 6 POUNDS PER 1000 SQUARE FEET OF 16-20-0 AMMONIUM PHOSPHATE SULFATE TO THE SUBGRADE.
3. SPREAD THE FULL THICKNESS OF THE AMENDED TOPSOIL OVER LOOSENED SUBGRADE. MIX THOROUGHLY INTO THE TOP 4 INCHES OF SUBGRADE.

C. FINISH GRADING: GRADE PLANTING AND TURF BEDS TO A SMOOTH, UNIFORM SURFACE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES. GRADE BEDS TO SLOPE AWAY FROM WALLS AND FOUNDATIONS OF BUILDINGS, STRUCTURES, AND CONCRETE PADS FOR POSITIVE DRAINAGE AND TO PREVENT PONDING. NOTIFY OWNER'S REPRESENTATIVE OF ANY AREAS THAT CANNOT BE GRADED TO ACHIEVE A 2% MINIMUM SLOPE.

1. GRADES NOT SPECIFICALLY INDICATED SHALL BE AS FOLLOWS:
   a. 1 INCH BELOW ADJACENT PAVING, CURBS, AND MOWING STRIPS FOR LAWNS
2. RESTORE PLANTING BEDS IF ERODED OR OTHERWISE DISTURBED AFTER FINISH GRADING IS COMPLETE AND BEFORE PLANTING INSTALLATION.

D. PRE-PLANTING IRRIGATION: IRRIGATE PLANTING BEDS TO FIELD CAPACITY TO THE DEPTH OF 6 INCHES FOR TURF AREAS 24 HOURS BEFORE INSTALLATION WORK. PLANTING BED SOIL SHALL BE MOIST AND FRIABLE BUT NOT SATURATED. IRRIGATE THE PLANTING AREA TO THE PROPER MOISTURE LEVEL PRIOR TO PROCEEDING WITH PLANTING WORK AND SODDING OPERATIONS.

E. LAY OUT INDIVIDUAL TREES IN THEIR CONTAINERS ON TOP OF PLANTING BEDS AND OBTAIN OWNER'S REPRESENTATIVE'S ACCEPTANCE OF LAYOUT BEFORE PLANTING. MAKE MINOR ADJUSTMENTS AS REQUIRED TO ACCOMPLISH THE DESIGN INTENT SHOWN ON DRAWINGS.

3.4 TREE EXCAVATION

A. PITS AND TRENCHES: EXCAVATE PITS TO THE WIDTH AND DEPTH AS SHOWN:

1. TRIM BASE OF PLANT PITS, LEAVING CENTER AREA RAISED SLIGHTLY TO SUPPORT ROOT BALL AND ASSIST IN DRAINAGE. DO NOT FURTHER DISTURB BASE. SCARIFY SIDES OF PLANT PIT SMEARED OR SMOOTHED DURING EXCAVATION.
2. USE OF AUGER OR TREE SPADE IS NOT ACCEPTABLE.

B. OBSTRUCTIONS: NOTIFY OWNER'S REPRESENTATIVE IF UNEXPECTED ROCK OR OBSTRUCTIONS DETRIMENTAL TO TREES OR SHRUBS ARE ENCOUNTERED IN EXCAVATIONS.

C. DRAINAGE: NOTIFY OWNER'S REPRESENTATIVE IF SUBSOIL CONDITIONS EVIDENCE UNEXPECTED WATER SEEPAGE OR RETENTION IN TREE OR SHRUB PITS.

D. TEST FOR DRAINAGE BEFORE PLANTING WHEN CLAY SOIL OR BEDROCK IS ENCOUNTERED DURING EXCAVATION. FILL EXCAVATIONS WITH 3 INCHES OF WATER AND ALLOW TO PERCOLATE AWAY.

1. MEASURE RATE OF PERCOLATION. IF WATER FAILS TO DRAIN AT A MINIMUM RATE OF 1/8 INCH PER HOUR OVER A 24 HOUR PERIOD, NOTIFY OWNER'S REPRESENTATIVE OF POOR DRAINAGE PROBLEM.
2. CORRECTION: UPON REQUEST OF OWNER'S REPRESENTATIVE, SUBMIT FOR APPROVAL A WRITTEN PROPOSAL AND COST ESTIMATE FOR THE CORRECTION OF POOR DRAINAGE CONDITIONS BEFORE PROCEEDING WITH PLANTING.

3.5 TREE PLANTING

A. EXAMINING PLANT MATERIAL: EXAMINE PLANT MATERIAL AND CHECK FOR INJURY AND PEST AND DISEASE INFESTATIONS. AFFECTED PLANTS SHALL BE REMOVED AND REPLACED AND NOT USED FOR PLANTING.

B. SET CONTAINER-GROWN STOCK PLUMB AND IN CENTER OF PIT WITH TOP OF ROOT BALL 1-INCH ABOVE ADJACENT FINISH GRADES.

1. DE-POTTING CANS: CAREFULLY CUT METAL CANS OR GENTLY SHAKE PLANT OUT FROM PLASTIC CONTAINERS WITHOUT DAMAGING ROOT BALL OR PLANT.
2. BOXED TREES: LIFT TO LOCATION BY FORKLIFT OR CART. REMOVE BOTTOM OF BOX AND TRANSFER BOX ONTO BURLAP FOR LOWERING INTO PIT. REMOVE BOX SIDES AND BURLAP AFTER TREE IS POSITIONED.
3. INSTALL DEEPROOT BARRIER PLANTER OR INTERLOCK DEEPROOT BARRIER PANELS TO FORM A PERIMETER CENTERED AROUND THE ROOTBALL OF TREES, PER MANUFACTURER'S INSTRUCTIONS WHEN A TREE IS PLANTED WITHIN 5 FEET OF PAVEMENT, STRUCTURES, WALLS, AND FOUNDATION. DIAMETER OF ROOTBALL BARRIER FOR BOXED TREES SHALL BE 24” MINIMUM LARGER THAN SIZE OF BOX.
4. PLACE PLANTING SOIL MIX AROUND ROOT BALL IN LAYERS, TAMPING TO SETTLE MIX AND ELIMINATE VOIDS AND AIR POCKETS. WHEN PIT IS APPROXIMATELY ONE-HALF BACKFILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE WATER IS ABSORBED. WATER AGAIN AFTER PLACING AND TAMPING FINAL LAYER OF PLANTING SOIL MIX.
5. FERTILIZER TABLETS: EVENLY DISTRIBUTE TABLETS AROUND MID-LEVEL OF BACKFILL IN QUANTITIES RECOMMENDED BY THE MANUFACTURER, AND NOT LESS THAN
   a. THREE TABLETS PER 15-GALLON CONTAINER
   b. FOUR TABLETS PER 24 INCH BOX
6. WATERING BASIN: OMIT BASIN IN DECOMPOSED GRANITE AREAS.

3.6 TREE PRUNING

A. TIMING: PRUNING WORK ON TREES SHALL PROCEED ONLY WITH OWNER'S REPRESENTATIVE'S APPROVAL, AFTER PLANTS HAVE DEMONSTRATED ESTABLISHMENT DURING THE MAINTENANCE PERIOD BY SHOWING NEW GROWTH AND IN HEALTHY CONDITION. REFER TO SECTION 02499 LANDSCAPE MAINTENANCE.

3.7 SOD LAWN INSTALLATION

A. SOD BED PREPARATION

1. ROLL AMENDED SOIL WITH 200 POUND WATER-BALLAST ROLLER TO A UNIFORM SURFACE CONFORMING TO GRADING REQUIREMENTS.
2. IRRIGATE TO MOISTEN LIGHTLY THE AREA TO BE SODDED IN ONE OPERATION AND ENSURE SOIL IS IN FRIABLE CONDITION.

B. SODDING OPERATIONS

1. SET OUT ONLY ENOUGH ROLLS OF SOD NEAR THE AREA TO BE SODDED IN ANY ONE OPERATION. PROTECT UNUSED SOD FROM DRYING OUT.
2. LAY FIRST ROW OF SOD IN A STRAIGHT LINE, TRIMMING TO FIT PERIMETER EDGE; UNROLL EACH STRIP AND BUTT SHORT ENDS TIGHTLY WITH ADJACENT STRIPS. DO NOT STRETCH OR OVERLAP SOD OR LEAVE VOIDS.
3. STAGGER LATERAL JOINTS. ON SLOPES OF 3:1 OR GREATER, LAY SOD WITH STAGGERED JOINTS SECURED BY PEGS DRIVE THROUGH SOD INTO SOIL AT 18 INCH ON CENTER. DRIVE PEGS FLUSH WITH TURF.
4. THOROUGHLY TAMP AND ROLL SOD TO MAKE CONTACT WITH SOIL. ROLL ENTIRE SECTION OF COMPLETED SOD AREA.
5. COVER AND PROTECT FROM DRYING OUT ANY REMAINING SOD REQUIRED FOR NEXT DAY INSTALLATION. WHEN SODDING WORK SPANS SEVERAL DAYS OF DURATION, ANY UNUSED SOD THAT BECOMES DRIED OUT SHALL BE REMOVED AND REPLACED WITH FRESH MATERIAL AS SPECIFIED.
6. THOROUGHLY WATER SOD IMMEDIATELY AFTER INSTALLATION TO WET THE SOD THROUGH THE UNDERSIDE AND THE SOIL TO THE DEPTH OF 6 INCHES.
7. SCHEDULE FERTILIZING OF SOD LAWN AT 25 DAYS AND 50 DAYS AFTER INSTALLATION. REFER TO SECTION 32 01 90 LANDSCAPE MAINTENANCE.

3.8 CLEANUP AND PROTECTION

A. DURING PLANTING, KEEP ADJACENT PAVEMENT AND CONSTRUCTION CLEAN AND WORK AREA IN AN ORDERLY CONDITION.

B. PROTECT PLANTS FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND OTHERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED PLANTING.

3.9 DISPOSAL

A. DISPOSAL: REMOVE SURPLUS SOIL AND WASTE MATERIAL, INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.

3.10 MAINTENANCE

A. MAINTAIN ALL PLANTINGS UNTIL FINAL ACCEPTANCE OF THE PLANTING WORK AND THE BEGINNING OF THE 90-DAY MAINTENANCE PERIOD. MAINTENANCE PRACTICES AND PROCEDURES SHALL BE AS SPECIFIED IN SECTION 32 01 90 LANDSCAPE MAINTENANCE

B. 90-DAY MAINTENANCE PERIOD: COMMENCEMENT OF PERIOD SHALL BE THE DATE OF FINAL ACCEPTANCE OF PLANTING WORK FOR THE PROJECT. MAINTENANCE PRACTICES AND PROCEDURE SHALL BE AS SPECIFIED IN SECTION 32 01 90 LANDSCAPE MAINTENANCE.

C. WARRANTY: WARRANT PLANT MATERIAL AND IRRIGATION SYSTEM FOR ONE YEAR FROM FINAL ACCEPTANCE OF COMPLETED WORK. REPLACE DEAD OR DYING PLANTS AND BROKEN IRRIGATION COMPONENTS WITHIN THIS PERIOD.

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3

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DATE SIGNED

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PLANTING SPECIFICATIONS
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EAS
DRAWN BY: EAS
DATE: 03/15/19

DRAWING NO.
P1.1
8 OF 20 SHEETS

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3

SECTION 32 15 40
DECOMPOSED GRANITE

PART 1 - GENERAL

1.01 PRINCIPAL WORK IN THIS SECTION:

A. THE REQUIREMENTS OF THE GENERAL CONDITIONS, AND DIVISION 1 - GENERAL REQUIREMENTS, APPLY TO THE WORK OF THIS SECTION.

B. COORDINATE THE WORK OF THIS SECTION WITH RELATED TRADES.

C. VERIFY APPLICABLE EXTENTS OF WORK AND DIMENSIONS AT THE JOBSITE.

D. PROVIDE MATERIALS, LABOR, EQUIPMENT AND SERVICES NECESSARY; FURNISH, DELIVER, AND INSTALL STABILIZED DECOMPOSED GRANITE PAVING AND ALL WORK AS INDICATED, AS SPECIFIED HEREIN AND/OR AS REQUIRED BY JOB CONDITIONS.

1.02 SUBMITTALS:

A. REFER TO SECTION 01300.

B. SAMPLES: SUBMIT SAMPLES OF THE FOLLOWING:

1. DECOMPOSED GRANITE: 5 LB. BAG FOR COLOR APPROVAL AND SIEVE ANALYSIS FOR GRADING OF DECOMPOSED GRANITE.
2. "STABILIZER" BINDER MATERIAL:
   a. MANUFACTURER'S SPECIFICATIONS.
   b. APPLICATION RECOMMENDATIONS.
   c. FABRIC MAT.
3. LANDSCAPE FABRIC

C. SHOP DRAWINGS: SUBMIT AND SHOW DETAILS OF INSTALLATION, INCLUDING PLANS AND SECTIONS.

1.03 PROJECT CONDITIONS:

A. DO NOT LAY DECOMPOSED GRANITE ON MUDDY SUBGRADE, DURING WET WEATHER, OR WHEN ATMOSPHERE TEMPERATURE IS BELOW 40 DEGREES F.

B. VERIFY FIELD DIMENSIONS OF WORK AREA BEFORE PROCEEDING WITH THE WORK.

1.04 QUALITY ASSURANCE:

A. INSTALLER QUALIFICATIONS: INSTALL SHALL PROVIDE EVIDENCE OF SUCCESSFUL EXPERIENCE IN INSTALLING DECOMPOSED GRANITE PAVING CONTAINING STABILIZER BINDER ADDITIVE.

B. MOCK-UPS: INSTALL A 4 FT WIDE X 10 FT. LONG MOCK-UP OF DECOMPOSED GRANITE PAVING WITH STABILIZER BINDER ADDITIVE AT OWNER DESIGNATED AREA FOR APPROVAL.

1.05 GUARANTEE/WARRANTY:

A. WARRANT IN WRITING THAT MATERIALS AND WORKMANSHIP TO BE FREE OF DEFECTS FOR A PERIOD OF TWO (2) YEARS. INSTALLER SHALL REPAIR OR REPLACE PARTS OR COMPONENTS OF THE SURFACING THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN THE SPECIFIED WARRANTY PERIOD. FAILURES SHALL INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:

1. PREMATURE WEAR AND TEAR WHEN PAVING IS MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN MAINTENANCE INSTRUCTIONS.
3. FAILURE OF SYSTEM TO MEET PERFORMANCE REQUIREMENTS.

B. CONTRACTOR SHALL PROVIDE UNCONDITIONAL MAINTENANCE AND REPAIRS AS REQUIRED FOR A PERIOD OF NINETY DAYS AFTER INSTALLATION.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. DECOMPOSED GRANITE:

1. COARSE AGGREGATE: 98% OR MORE PASSING ¼ INCH SIZE SIEVE.
2. FINE AGGREGATE: 95% PASSING NUMBER 4 SIEVE SIZE.
3. "CALIFORNIA GOLD TRACK FINES" BY GRANITE CONSTRUCTION CO., SANTA CRUZ, CALIFORNIA; GRANITE ROCK CO., WATSONVILLE, CALIFORNIA; OR APPROVED EQUAL, COLOR TO BE GOLD. SUBMIT SAMPLE FOR APPROVAL.

B. LANDSCAPE FABRIC: MIRASCAPE NONWOVEN POLYPROPYLENE LANDSCAPE WEED BARRIER FABRIC, BY MIRAFI CONSTRUCTION PRODUCTS, 365 SOUTH HOLLAND DRIVE, PENDERGRASS, GEORGIA 30567; PHONE: 706-693-2226; WWW.MIRAFI.COM; OR APPROVED EQUAL.

PART 3 - EXECUTION

3.01 PRE-INSTALLATION INSPECTION:

A. VERIFY SUBBASE GRADES AND COMPACTION BEFORE PLACING DECOMPOSED GRANITE. REPORT ANY DEFICIENCIES TO OWNERS REPRESENTATIVE. VERIFY BASE GRADES AND COMPACTION BEFORE PLACING DECOMPOSED GRANITE.

B. NATIVE SUBGRADE SHALL BE COMPACTED TO 90% RELATIVE COMPACTION IN ACCORDANCE WITH THE SOIL REPORT, TO THE REQUIRED DEPTH TO ACCOMMODATE THE DEPTH OF THE DECOMPOSED GRANITE.

3.02 HERBICIDE PLACEMENT:

A. PRIOR TO INSTALLING DECOMPOSED GRANITE, APPLY RECOMMENDED PRE-EMERGENT HERBICIDE TO SUBGRADE IN STRICT CONFORMANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.

3.03 DECOMPOSED GRANITE:

A. INSTALL LANDSCAPE FABRIC SMOOTHLY OVER PREPARED SUBBASE.

B. SPREAD DECOMPOSED GRANITE AGGREGATES TO THE LEVEL OF REQUIRED FINISHED GRADE AND CROSS SECTION.

C. SPRAY WATER UNIFORMLY OVER DECOMPOSED GRANITE TO ACHIEVE A FULL DEPTH OF MOISTURE PENETRATION OF THE PATHWAY PROFILE,

1. APPLY AT A RATE OF 25 TO 45 GALLONS OF WATER PER ONE TON.
2. RANDOMLY TEST FOR MOISTURE DEPTH DURING APPLICATION USING A PROBE AND CONTINUE APPLY WATER UNTIL FULL MOISTURE PENETRATION IS ACHIEVED.

E. COMPACT AGGREGATES TO 90% MINIMUM TO REQUIRED FINISH GRADE, ADDING MORE AGGREGATES AS NEEDED.

1. COMMENCE COMPACTION 6 HOURS AFTER PLACEMENT BUT IN NO CASE AFTER 48 HOURS OF PLACEMENT.
2. COMPACT WITH HEAVY DRUM ROLLER EQUIPMENT NOT LESS THAN 1000 LBS IN WEIGHT, OR IN AREAS ADJACENT TO PLANTING AND IRRIGATION, HAND TAMP MAY BE USED AS APPROPRIATE.

3.04 INSPECTION:

A. FINISHED SURFACE OF PATHWAY SHALL BE SMOOTH, UNIFORM AND SOLID, WITHOUT EVIDENCE OF CHIPPING OR CRACKING.

B. COMPACTED PATHWAY SHALL BE FIRM THROUGHOUT ITS PROFILE, WITH NO SPONGY AREAS. LOOSE MATERIAL SHALL NOT BE PRESENT ON THE SURFACE.

C. REPAIR: REPAIR IRREGULARITIES IN PATH SURFACE TO THE UNIFORMITY OF THE ENTIRE INSTALLATION.

3.05 MAINTENANCE:

A. REMOVE DEBRIS BY MECHANICALLY BLOWING OR HAND RAKING THE SURFACE AS NEEDED.

B. DURING THE FIRST YEAR MINOR AMOUNTS OF LOOSE AGGREGATES UNDER ½" SIZE MAY APPEAR ON THE PAVING SURFACE. WHEN AGGREGATES OF ¼" OR LARGER APPEAR, REDISTRIBUTE THE MATERIAL OVER THE ENTIRE SURFACE. WATER THOROUGHLY TO THE DEPTH OF 1", FOLLOWED BY COMPACTION WITH POWER ROLLER NOT LESS THAN 1000 LBS. IN WEIGHT. REPEAT PROCESS AS NEEDED.

C. IF CRACKING OCCURS, SWEEP FINES INTO THE CRACKS, WATER THOROUGHLY AND HAND TAMP WITH AN 8" TO 10" HAND TAMP PLATE.

3.06 REPAIRS:

A. EXCAVATE DAMAGED AREA TO THE DEPTH OF THE STABLIZED AGGREGATE AND SQUARE OFF SIDEWALLS.

B. IF AREA IS DRY, MOISTEN DAMAGED PORTION LIGHTLY.

C. APPLY MOISTENED AGGREGATE TO EXCAVATED AREA TO FINISH GRADE.

D. COMPACT WITH AN 8" TO 10" HAND TAMP OR 2250-300 POUND ROLLER. KEEP TRAFFIC OFF AREAS FOR 12 TO 48 HOURS AFTER REPAIR HAS BEEN COMPLETED.

SECTION 32 01 90
LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1. THIS SECTION GIVES A BRIEF DESCRIPTION OF THE WORK INCLUDED, LISTS WORK BY THE OWNER AND ANY OTHER CONTRACTS, AND ESTABLISHES LIMITS ON THE CONTRACTOR'S USE OF THE SITE AND PREMISES.

2. LANDSCAPE INCLUDES MAINTAINING EXTERIOR SITE LANDSCAPE AREAS FOR A PERIOD OF 90-DAYS FOR THE FOLLOWING:
   2.1. MAINTENANCE OF PLANTINGS AND LAWNS.
   2.2. MAINTENANCE OF LANDSCAPED GROUNDS.
   2.3. DISPOSAL OF GREEN AND TRASH WASTE.
   2.4. LABOR AND EQUIPMENT FOR WORK IN THIS SECTION.
   2.5. REPLACEMENT AND REPLANTING OF FAILED PLANTINGS.

3. SUBMITTALS:
   3.1. MAINTENANCE PROGRAM: SUBMIT FOR APPROVAL 2 COPIES OF THE PROPOSED MAINTENANCE PROGRAM FOR THE WORK DURING THE 90-DAY MAINTENANCE PERIOD.

4. QUALITY ASSURANCE:
   4.1. ENGAGING A SEPARATE LANDSCAPE MAINTENANCE COMPANY FOR THE WORK IN THIS SECTION WILL BE SUBJECT TO CLIENT APPROVAL.
   4.2. LANDSCAPE MAINTENANCE COMPANY: 5 YEARS MINIMUM EXPERIENCE WITH SIMILAR SIZE AND TYPE OF PROJECT AND MEETING THE QUALIFICATIONS AND REQUIREMENTS OF THIS SECTION AND OTHER RELATED SECTIONS OF THIS CONTRACT.

5. MAINTENANCE PERIOD
   5.1. COMMENCEMENT: DATE OF ACCEPTANCE OF LANDSCAPE INSTALLATION WORK.
   5.2. DURATION: 90 DAYS FROM DATE OF COMMENCEMENT OR LONGER AS REQUIRED FOR PLANT ESTABLISHMENT SPECIFIED HEREIN.
   5.3. MAINTENANCE REVIEW: PROVIDE 5 WORKING DAYS ADVANCE NOTICE TO CLIENT WHEN SCHEDULING A FIELD REVIEW OF MAINTENANCE WORK.
      5.3.1. INTERMEDIATE REVIEW: AT THE END OF 45 DAYS
      5.3.2. FINAL ACCEPTANCE INSPECTION: AT THE END OF 90 DAYS

6. WARRANTY
   6.1. UNACCEPTABLE PLANTS: REPLACE DEAD PLANTS AND PLANTS NOT SHOWING EVIDENCE OF ACTIVE GROWTH AT END OF MAINTENANCE PERIOD.
   6.2. REPLACEMENT PLANTS: PROVIDE SAME KIND AND SIZE AS ORIGINALLY PLANTED. MAINTAIN REPLACEMENT PLANTS FOR A NEW MAINTENANCE PERIOD, LENGTH SAME OF ORIGINAL.
   6.3. SPECIAL WARRANTY PERIOD:
      6.3.1. TREES: ONE YEAR.
      6.3.2. LAWNS: ONE YEAR UNLESS SPECIFICALLY NOTED OTHERWISE.
   6.4. WARRANTY PERIOD SHALL COMMENCE UPON WRITTEN ACCEPTANCE OF THE LANDSCAPING BY THE CLIENT.

7. REPLACEMENT PLANTS:
   7.1. PLANT MATERIALS: NURSERY-GROWN STOCK REQUIREMENTS AS SPECIFIED IN PLANTING NOTES.
   7.2. FROM SAME SOD SOURCE AND MATCH EXISTING SOD TYPE, AS SPECIFIED IN PLANTING NOTES.
   7.3. LANDSCAPE PLANTS: MATCH SPECIES, SIZE, FORM AND QUALITY, SUBJECT TO APPROVAL. SAME NURSERY THAT SUPPLIED THE ORIGINAL PLANTS, UNLESS OTHERWISE APPROVED.
   7.4. PLANTING ACCESSORIES: AS SPECIFIED IN PLANTING NOTES.

8. FERTILIZERS
   8.1. COMMERCIAL COMPLETE FERTILIZER WITH A N-P-K NUTRIENT RATIO OF 1-2-1 AS APPROVED.
   8.2. PLANTINGS: COMMERCIAL COMPLETE FERTILIZE WITH A N-P-K NUTRIENT RATIO OF 3-1-1 AS APPROVED.

9. EXAMINATION AND PREPARATION
   9.1. VERIFY CONDITION OF LANDSCAPE AREAS AND THE IRRIGATION SYSTEM'S OPERATION DURING HANDOVER OF PROJECT AT COMMENCEMENT OF MAINTENANCE PERIOD.
   9.2. DOCUMENT GENERAL CONDITIONS OF PLANTINGS, INCLUDING TREES AND LAWNS.
   9.3. RECORD PLANT MATERIALS THAT ARE DAMAGED, IN POOR CONDITION OR DYING THAT ARE SUBJECT TO REPLACEMENT AS PART OF THE ORIGINAL INSTALLATION WORK.
   9.4. DOCUMENT GENERAL CONDITION OF EXISTING IRRIGATION SYSTEM AND ANY WORK THAT DO NOT MEET SPECIFIED REQUIREMENTS AND ARE SUBJECT TO CORRECTIVE WORK.
   9.5. REVIEW APPROVED MAINTENANCE PROGRAM FOR THE MAINTENANCE PERIOD AND CLARIFY QUESTIONS WITH CLIENT REPRESENTATIVE.

10. PROTECTION:
   10.1. PROTECT PLANTING AREAS FROM DAMAGE OF ALL KINDS FROM BEGINNING OF WORK UNTIL FINAL ACCEPTANCE.
   10.2. PUBLIC PROTECTION: PROVIDE TEMPORARY BARRIERS, FENCES, AND SIGNS AS NECESSARY TO PROTECT THE PUBLIC FROM POTENTIAL HAZARDS FROM ANY WORK UNDER THIS SECTION.
   10.3. WORKER PROTECTION: ENSURE ALL WORK UNDER THIS SECTION COMPLIES WITH LOCAL, STATE AND FEDERAL LAWS, CODES, AND REGULATIONS.

11. GENERAL MAINTENANCE WORK
   11.1. IRRIGATION SYSTEMS: MAINTAIN THE IRRIGATION SYSTEMS FOR THE PLANTING AREAS IN FULL OPERATIONAL CONDITION.
   11.2. ADJUST CONTROLLER PROGRAM ONCE A WEEK OR AS FREQUENTLY AS NEEDED, TO PROVIDE SUFFICIENT WATER TO PLANTINGS ACCORDING TO EVAPOTRANSPIRATION (ET) RATES AND WEATHER CONDITIONS.
   11.3. INSPECT ALL PORTIONS OF THE IRRIGATION SYSTEM ONCE A WEEK FOR REPAIR NEEDS TO PREVENT DAMAGE TO PLANTINGS AND TO PREVENT WATER LOSS.
   11.4. VISUALLY CHECK FOR DISTRESSED PLANTS AS SIGN OF POTENTIAL IRRIGATION PROBLEMS AND INSPECT FOR LEAKS AND ANY OTHER DAMAGES AND MALFUNCTIONS IN THE SYSTEM, INCLUDING ALL CONTROL COMPONENTS.
   11.5. CHECK SPRAY HEADS AND SPRINKLERS DURING OPERATION IMMEDIATELY AFTER MOWING OF LAWNS. CHECK FOR WATER COVERAGE AND DAMAGE FROM MOWING EQUIPMENT. ADJUST SPRINKLERS TO ENSURE UNIFORM AND ADEQUATE APPLICATION OF WATER TO ENTIRE LAWN AREAS.
   11.6. RESTORE, REPAIR OR REPLACE COMPONENTS PROMPTLY AS REQUIRED BY TRAINED, EXPERIENCED PERSONNEL.
   11.7. IN THE EVENT OF FAILURE OF THE AUTOMATIC IRRIGATION SYSTEMS FOR LONGER THAN 3 DAYS, MANUALLY WATER PLANTINGS UNTIL AUTOMATIC SYSTEM IS RESTORED TO FULL OPERATION.

12. FERTILIZATION: IN ACCORDANCE WITH APPROVED MAINTENANCE PROGRAM.

13. WEEDING: KEEP ALL PLANTINGS AND HARDSCAPE AREAS FREE OF WEEDS.
   13.1. APPLY INTEGRATED PEST MANAGEMENT PRACTICES AS MUCH AS PRACTICABLE. WHERE PRACTICABLE, WEED BY HAND OR MECHANICAL EQUIPMENT TO REDUCE USE OF HERBICIDES.
   13.2. WHERE INFESTATION IS EXTENSIVE, APPLY APPROPRIATE PREEMERGENT AND SELECTIVE HERBICIDES BY A PEST CONTROL APPLICATOR, AS RECOMMENDED BY PEST CONTROL ADVISOR IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND LOCAL CODES AND REGULATIONS.

14. PEST AND DISEASE CONTROL:
   14.1. APPLY INTEGRATED PEST MANAGEMENT PRACTICES AS MUCH AS IS PRACTICABLE.
   14.2. INSPECTIONS: VIGILANTLY CHECK FOR DISEASES AND PESTS DURING ROUTINE MAINTENANCE ACTIVITIES, IN ADDITION TO REGULARLY SCHEDULED INSPECTIONS BY PEST CONTROL ADVISOR TO PREVENT SPREAD OF INFESTATION.
   14.1. CONTROL DISEASES AND VERTEBRATE AND INVERTEBRATE PESTS PROMPTLY TO PREVENT SPREADING OF PROBLEMS.
   14.2. CHEMICAL TREATMENT: WHEN RECOMMENDED BY THE PEST CONTROL ADVISOR, APPLY IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND LOCAL CODES AND REGULATIONS.

15. GROUNDS MAINTENANCE:
   15.1. REMOVE FROM PROJECT AND DISPOSE LEGALLY ALL DEBRIS CREATED FROM MAINTENANCE OPERATIONS AT THE END OF EACH WORKDAY. RECYCLE GREEN WASTE IN APPROPRIATE MANNER.
   15.2. REMOVE AND DISPOSE LEGALLY ALL TRASH AND LITTER THAT COLLECT IN PLANTED AND HARDSCAPE AREAS IN THE COURSE OF MAINTENANCE WORK.
   15.3. CLEAR GUTTERS, DRAIN INLETS, CATCH BASINS AND DRAINAGE OF DEBRIS AND OTHER OBSTRUCTIONS TO ALLOW DRAINAGE OF EXCESS IRRIGATION WATER AND PRECIPITATION AND TO PREVENT PONDING AND FLOODING.

16. TREES
   16.1. TRAINING AND PRUNING:
      16.1.1. TRAIN YOUNG TREES UNDER FIVE (5) YEARS USING THINNING CUTS TO DEVELOP A PROPERLY CALLIPERED AND TAPERED TRUNK AND PERMANENT SCAFFOLD BRANCHES. STRIPPING OF LOWER BRANCHES (RAISING UP) OF YOUNG TREES WILL NOT BE PERMITTED. RETAIN LOWER BRANCHES IN A TIPPED-BACK OR PINCHED CONDITION.
      16.1.2. PRUNE TREES TO MAINTAIN A NATURAL APPEARANCE, BALANCING CROWN WITH ROOTS. DO NOT MAKE HEADING CUTS OR STUB BACK TO TRUNK OR PRIMARY BRANCHES.
      16.1.3. PRUNE TREES TO ELIMINATE DISEASED AND DAMAGED GROWTH, AND NARROW V SHAPED BRANCH FORKS THAT LACK STRENGTH.
      16.1.4. PRUNING INDIVIDUAL SPECIES: SCHEDULE PRUNING FOR THE TIME OF YEAR RECOMMENDED BY PUBLISHED HORTICULTURAL STANDARD. AVOID PRUNING WHEN THERE IS INCREASED RISK OF INSECT ATTACK OR DISEASE INFESTATION FOR THE SPECIES.
   16.2. STAKING OF TREES:
      16.2.1. INSPECT STAKES AT LEAST ONCE A MONTH TO PREVENT DAMAGE TO A TREE. ADJUST, REPOSITION AND RESTAKE AS NEEDED IN ACCORDANCE WITH PLANTING NOTES.
      16.2.2. REMOVE STAKES AS SOON AS TREE CAN STAND UNSUPPORTED DURING NORMAL WIND CONDITIONS, IN MOST CASES WITHIN TWO GROWING SEASONS FOLLOWING ORIGINAL INSTALLATION.
   16.3. FERTILIZATION: FERTILIZE TREES WITH A HIGH NITROGEN FERTILIZER ONCE IN THE DORMANT SEASON IN LATE WINTER OR EARLY SPRING AT RATES BELOW. FOR TREES GROWING IN GROUND COVER AND SHRUB AREAS AND IN LAWNS, THE FERTILIZATION SHALL BE IN ADDITION TO THAT APPLIED TO THESE OTHER PLANTS:
      16.3.1. TREES LESS THAN 6 INCHES IN TRUNK DIAMETER: 0.15 LB TO 0.37 LB N PER INCH OF TRUNK DIAMETER.
      16.3.2. TREES GREATER THAN 6 INCHES MM IN TRUNK DIAMETER: 0.37 LB TO 0.75 LB N PER INCH OF TRUNK DIAMETER.
      16.3.3. DISTRIBUTE FERTILIZER UNIFORMLY AROUND THE ROOT ZONE WITHIN THE DRIP LINE AND WATER THOROUGHLY INTO THE ROOT ZONE.

17. LAWNS
   17.1. MOW ONCE EVERY SEVEN (7) CALENDAR DAYS FROM MAY THROUGH OCTOBER AND WHEN NEEDED FROM NOVEMBER THROUGH APRIL TO MAINTAIN THE TURF IN A NEAT AND CLIPPED APPEARANCE.
   17.2. CLIPPINGS: REMOVE AND DISPOSE OF ALL TURF CLIPPINGS, OR WITH CLIENT APPROVAL, ALLOW CLIPPINGS TO DECOMPOSE INTO LAWNS.
   17.3. MOW HEIGHT: BETWEEN 2 INCHES AND 3 INCHES FOR TALL FESCUE HYBRIDS DURING HOT SEASON AND BETWEEN 1-1/2 INCH AND 2 INCHES DURING COOL SEASON.
   17.4. EDGE ALL TURF AREAS MECHANICALLY.
   17.5. AERIFICATION: AERIFY ALL LAWN AREAS ONCE A YEAR IN LATE WINTER BY THE END OF MARCH, TIMING OPERATION TO OCCUR BEFORE CRABGRASS PREEMERGENCE APPLICATION.
   17.6. AERIFICATION: NOT ALLOWED WITHIN 60 DAYS OF OVERSEEDING OPERATION FOR WARM SEASON GRASS. APPROXIMATELY 3 INCHES LONG AND 5/8 INCHES DIAMETER DISTRIBUTED 3 INCHES ON CENTER. LEAVE CORES ON THE SURFACE TO ALLOW IRRIGATION WATER TO WASH SOIL INTO TURF. REMOVE AND DISPOSE ANY REMAINS WITHIN TEN (10) DAYS OF AERIFICATION.
   17.7. THATCHING: THATCH AS NEEDED TO REDUCE BUILD-UP TO ½ INCH OR LESS.
      17.7.1. COORDINATE THATCHING WITH ANNUAL OVERSEEDING WHEN APPROPRIATE.
      17.7.2. MAKE THATCHING PASSES IN PERPENDICULAR DIRECTIONS.
      17.7.3. SET BLADES APPROXIMATELY 1 INCH ON CENTER AND DEEP ENOUGH TO CUT INTO BUT NOT BELOW THE THATCH LAYER.
      17.7.4. REMOVE ALL DEBRIS FROM THATCHING WORK.

18. WEED CONTROL:
   18.1. PREEMERGENT HERBICIDE: MAKE TWO (2) APPLICATIONS OF PREEMERGENT HERBICIDE TO PREVENT GERMINATION OF SUMMER GRASSY WEEDS, THE FIRST APPLICATION PRIOR TO WEED GERMINATION IN THE SPRING AND THE SECOND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
   18.2. COORDINATE PREEMERGENT HERBICIDE APPLICATIONS WITH AERIFICATION, THATCHING AND OVERSEEDING OPERATIONS.
   18.3. IN THE CASE OF CRABGRASS CONTROL, TIME THE SPRING APPLICATION FOR DAY TIME AIR TEMPERATURE RANGE BETWEEN 65 DEG TO 70 DEG F FOR AT LEAST FOUR CONSECUTIVE DAYS OR WHEN SOIL TEMPERATURE EXCEEDS 50 DEG F FOR THREE OR MORE DAYS.
   18.4. SELECTIVE HERBICIDE: CONTROL GRASSY PERENNIAL WEEDS AND BROADLEAF ANNUAL AND PERENNIAL WEEDS WITH RECOMMENDED SELECTIVE HERBICIDE WHEN NECESSARY.
   18.5. HERBICIDE HANDLING AND APPLICATION: AS SPECIFIED IN THIS SECTION.
   18.6. PEST CONTROL: AS SPECIFIED IN THIS SECTION.

19. REPAIR, REPLACEMENT AND REPLANTING
   19.1. DAMAGES TO PROPERTY, INCLUDING BUT NOT LIMITED TO ALL STRUCTURES, UTILITIES, AND OTHER FINISHED WORK DUE TO CONTRACTOR'S NEGLECT OR PERFORMANCE OF THE WORK SHALL BE REPORTED TO COLLEGE REPRESENTATIVE. RESTORE, REPAIR, REPLACE, OR REBUILD DAMAGED PROPERTY AT CONTRACTOR'S EXPENSE.
   19.2. PLANTS DAMAGED, INJURED, OR KILLED DUE TO NEGLECT OR IN THE COURSE OF PERFORMING THE WORK IN THIS SECTION SHALL BE REPLACED WITH HEALTHY, WELL DEVELOPED PLANT MATERIAL TO MATCH THOSE ORIGINALLY INSTALLED. REPLANT WITHIN 10 DAYS OF NOTICE OF DAMAGE AND IN ACCORDANCE TO ORIGINAL DRAWINGS AND SPECIFICATIONS.

20. FINAL ACCEPTANCE: UPON SATISFACTORY COMPLETION OF ALL WORK REQUIRED FOR THE MAINTENANCE PERIOD, BUT EXCLUSIVE OF REPLACEMENT MATERIALS UNDER WARRANTY PERIOD. COORDINATE A REVIEW FOR FINAL ACCEPTANCE WITH CLIENT AT LEAST 5 WORKING DAYS PRIOR TO ANTICIPATED FINAL REVIEW DATE AT THE END OF MAINTENANCE PERIOD.

21. CORRECTIVE WORK: COMPLETE WORK REQUIRING CORRECTIVE ACTION OR REPLACEMENT WITHIN 10 DAYS OF REVIEW NOTICE AND PERFORM IN ACCORDANCE WITH ORIGINAL REQUIREMENTS. AFTER CORRECTIVE WORK IS COMPLETED, REQUEST A FINAL REVIEW FOR FINAL ACCEPTANCE AS SPECIFIED ABOVE. CONTINUE MAINTENANCE OF LANDSCAPED AREAS UNTIL CORRECTIVE MEASURES HAVE BEEN COMPLETED AND ACCEPTED.

22. CONDITIONS FOR FINAL ACCEPTANCE OF WORK AT END OF MAINTENANCE PERIOD:
   22.1. EACH PLANT SHALL BE ALIVE AND THRIVING, SHOWING SIGNS OF GROWTH AND NO SIGNS OF STRESS, DISEASE, AND OTHER WEAKNESSES.
   22.2. PLANTS NOT MEETING THESE CONDITIONS SHALL BE REPLACED AND A ONE-YEAR WARRANTY PERIOD WILL COMMENCE FOR SUCH PLANTS ON DATE OF FINAL ACCEPTANCE.
   22.3. FINAL ACCEPTANCE DATE: DATE ON WHICH THE ARCHITECT ISSUES A NOTICE OF FINAL ACCEPTANCE WHEN THE OWNER WILL ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE WORK.

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REGISTERED LANDSCAPE ARCHITECT
LIC. #4038
ANN SEVER
(SIGNATURE)
STATE OF CALIFORNIA

SIGNATURE

DATE SIGNED

RTA TRANSIT CENTER
PLANTING SPECIFICATIONS
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EAS
DRAWN BY: EAS
DATE: 03/15/19

DRAWING NO.
P1.2
9 OF 20 SHEETS

FILE NAME: 1307-0003 LPLT.DWG

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
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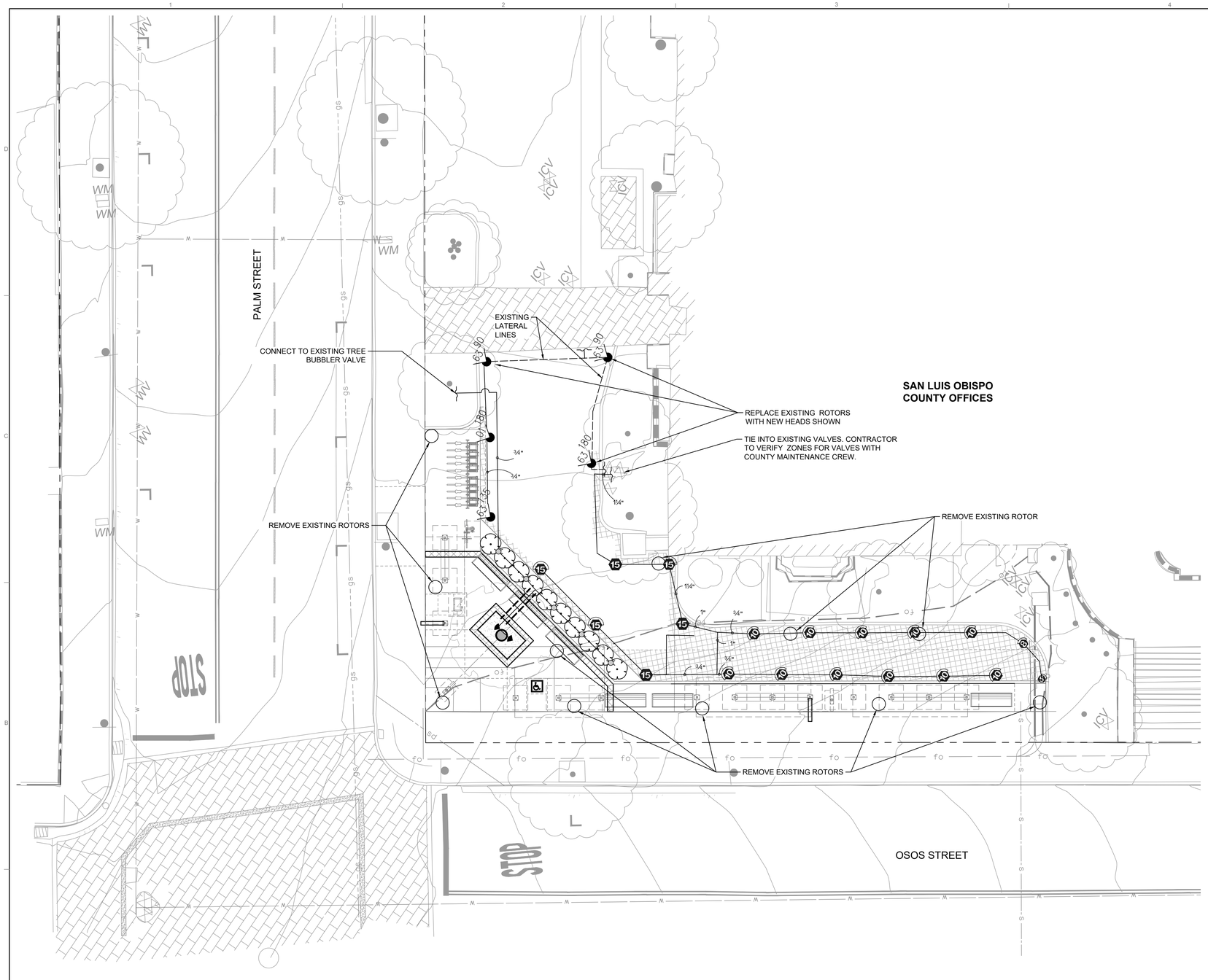

IRRIGATION NOTES:

1. ALL EXISTING IRRIGATION HEADS AND LINES IN AREA OF NEW CONCRETE PAVING SHALL BE REMOVED.
2. RELOCATE HEADS TO NEW EDGE OF CONCRETE PAVING. SELECT NEW NOZZLES THAT WILL PROVIDE HEAD TO HEAD COVERAGE OF TURF AREA WITH MINIMAL OVERSPRAY ONTO PAVEMENT.
3. ADD TWO (2) DEEP ROOT TREE BUBBLERS TO NEW TREE. CONNECT BUBBLERS TO EXISTING SHRUB IRRIGATION VALVE.
4. SEE IRRIGATION PLAN, SCHEDULE, SPECIFICATIONS, AND DETAILS FOR ADDITIONAL IRRIGATION INFORMATION. SEE PLANTING PLAN, SCHEDULE, SPECIFICATIONS AND DETAILS FOR RELATED WORK.
5. TRENCH IN ACCORDANCE WITH SECTION 02300.

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI
Q T H TT TQ F	Toro 570Z-2LP 5 Series Turf Spray, 2" Pop-Up, with a Zero Flush Seal. Low Pressure Sealing, allowing for pop-up and retraction at lower pressures. 1/2" Female-Threaded Inlet. Ideal for small to medium landscape areas.	1	30
Q T H TT TQ F	Toro 570Z-2LP 8 Series Turf Spray, 2" Pop-Up, with a Zero Flush Seal. Low Pressure Sealing, allowing for pop-up and retraction at lower pressures. 1/2" Female-Threaded Inlet. Ideal for small to medium landscape areas.	1	30
Q T H TT TQ F	Toro 570Z-2LP 10 Series Turf Spray, 2" Pop-Up, with a Zero Flush Seal. Low Pressure Sealing, allowing for pop-up and retraction at lower pressures. 1/2" Female-Threaded Inlet. Ideal for small to medium landscape areas.	11	30
Q T H TT TQ F	Toro 570Z-2LP 15 Series Turf Spray, 2" Pop-Up, with a Zero Flush Seal. Low Pressure Sealing, allowing for pop-up and retraction at lower pressures. 1/2" Female-Threaded Inlet. Ideal for small to medium landscape areas.	3	30
8 10 12 15	Toro 570Z-2LP ADJ Turf Spray, 2" Pop-Up, with a Zero Flush Seal. Low Pressure Sealing, allowing for pop-up and retraction at lower pressures. 1/2" Female-Threaded Inlet. Ideal for small to medium landscape areas.	3	30
1401 1402 1404 1408	Rain Bird RWS-B-C-SOCK 1401 Root Watering System with 4.0" diameter x 36.0" long with locking grate, semi-rigid mesh tube. Check Valve and Sand Sock. Rain Bird bubbler option as indicated: 1401 0.25 gpm, 1402 0.5 gpm, 1404 1.0 gpm, 1408 2.0 gpm.	2	30
511 512 514 516	Toro 570S-500 Stream Adjustable Stream Bubbler on Fixed Riser. 1/2" FIPT Threads.	5	10

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS
01 ARC	Toro 300-00 3.0" turf popup multi-stream rotor with nine fixed arcs from 90 to 360. 01, 02, 03 nozzles have radius from 16' to 30', and 63 and 93 nozzles are low flow.	1	35	0.57	16'
63 ARC	Toro 300-00 3.0" turf popup multi-stream rotor with nine fixed arcs from 90 to 360. 01, 02, 03 nozzles have radius from 16' to 30', and 63 and 93 nozzles are low flow.	4	35	1.53	28'

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Irrigation Lateral Line: PVC Schedule 40	339.1 l.f.
	Pipe Sleeve: PVC Class 315 SDR 13.5 Typical pipe sleeve for irrigation pipe. Pipe sleeve size shall allow for irrigation piping and their related couplings to easily slide through sleeving material. Extend sleeves 12 inches beyond edges of paving or construction.	8.0 l.f.

Valve Callout
— Valve Number
#" — Valve Flow
— Valve Size

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 IN = 10 FT

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RTA TRANSIT CENTER
IRRIGATION PLAN
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EAS
DRAWN BY: EAS
DATE: 03/15/19

DRAWING NO.
IR1.0
10 OF 20 SHEETS

FILE NAME: 1307-0003 LIRR.DWG

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3
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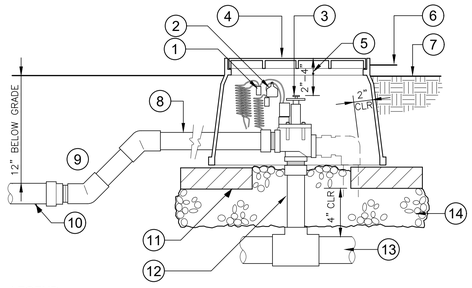
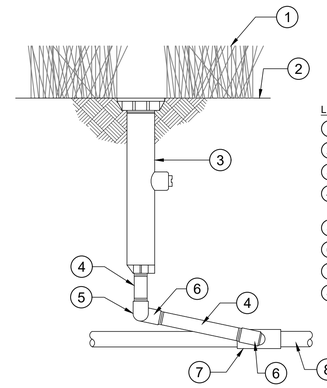


LEGEND

1. WATER PROOF WIRE CONNECTORS ON 30" LOOPED WIRES
2. PLASTIC I.D. TAG AT EACH VALVE
3. REMOTE CONTROL VALVE, ONE PER BOX
4. 10X15 RECTANGULAR VALVE BOX
5. 2" MINIMUM, 4" MAXIMUM BELOW TOP OF BOX
6. 3/4" ABOVE FINISH GRADE AT LAWN
7. 2" ABOVE FINISH GRADE AT SHRUBS
8. OUTLET PIPE SAME SIZE AS VALVE, 24" MIN. TO FIRST FITTING
9. 45 DOWN AS REQUIRED TO LATERAL PIPE DEPTH
10. INCREASE LATERAL LINE AS PER IRRIGATION PLAN
11. CONCRETE BRICK SUPPORT, TWO ON EACH SIDE
12. SCHEDULE 80 RISER
13. MAIN LINE
14. 6" THICK LAYER OF PEA GRAVEL

1 ELECTRIC REMOTE CONTROL VALVE

1 1/2" = 1'-0" 328406.13-01

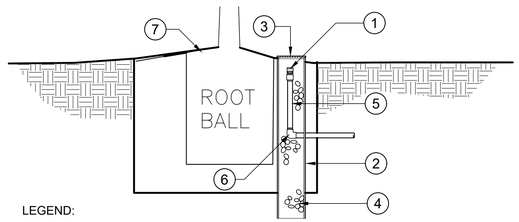


LEGEND:

1. TURF
2. FINISH GRADE
3. POP-UP SPRAY OR ROTOR HEAD
4. PVC SCH 80 NIPPLE, LENGTH AS REQUIRED
5. PVC SCH 40 ELL
6. PVC CSH 40 STREET ELL
7. PVC SCH 40 TEE OF ELL
8. PVC LATERAL PIPE

2 POP-UP TURF SPRAY

NTS 328403.13-06

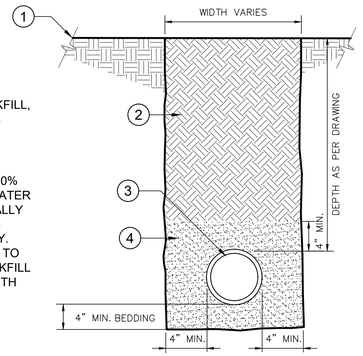


LEGEND:

1. BUBBLER HEAD, PLACE INSIDE PERFORATED PIPE UNDER GRATE CAP
2. ROOT WATERING TUBE
3. LOCKING GRATE CAP. TOP OF CAP SHALL BE A MINIMUM OF 1/2 INCH ABOVE FINISHED GRADE
4. FILL TUBE WITH ROUNDED DRAIN ROCK TO JUST BELOW BUBBLER CONNECTION
5. THREADED SCH 80 RISER, LENGTH AS REQUIRED
6. THREAD/SLIP ELL
7. TREE PLANTING AS INDICATED ON PLANTING DETAILS

3 ROOT WATERING SYSTEM

3/16" = 1'-0" 328403.53-17



LEGEND

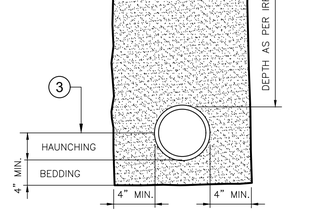
1. FINISHED GRADE
2. NATIVE SOIL BACKFILL, COMPACT TO 80% COMPACTION
3. PVC LINE
4. BACKFILL WITH 100% COARSE SAND, WATER JET & MECHANICALLY COMPACT TO 90% OPTIMUM DENSITY. ALLOW 48 HOURS TO SETTLE, AND BACKFILL AND COMPACT WITH NATIVE SOIL

4 PIPE TRENCH

1 1/2" = 1'-0"

1. NEW CONCRETE PAVING SEE PLANS
2. BACKFILL WITH NATIVE SOIL, COMPACTED TO 90% OPTIMUM DENSITY
3. PVC SLEEVE SHALL BE BACKFILLED TO THE HAUNCHING AND COMPACTED TO 90% PRIOR TO COMPLETING SUBSEQUENT BACKFILL

NOTE:
REMOVE ROCKS AND DEBRIS LARGER THAN 1" DIAMETER PRIOR TO BACKFILLING.



5 SLEEVING AT CONCRETE PAVING

1 1/2" = 1'-0" 328409.76-16

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DRAWING NO.
IR1.1
11 OF 20 SHEETS

FILE NAME: 1307-0003 LIRR.DWG

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
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SECTION 32 84 00
LANDSCAPE IRRIGATION

PART 1 GENERAL

1.01 SUMMARY

A. SECTION INCLUDES:
1. PIPE AND FITTINGS.
2. VALVES.
3. SPRINKLERS, OUTLETS AND ACCESSORIES.
4. CONTROL SYSTEM.

1.02 SYSTEM DESCRIPTION

A. AUTOMATIC PROGRAMMABLE ELECTRONIC SOLENOID CONTROLLED UNDERGROUND IRRIGATION SYSTEM FOR EXTERIOR PLANTINGS.

1.03 RELATED SECTIONS

A. SECTION 32 93 00 - PLANTING

1.04 DEFINITIONS

A. LATERAL PIPING: DOWNSTREAM FROM CONTROL VALVES TO SPRINKLERS, SPECIALTIES, AND DRAIN VALVES. PIPING IS UNDER PRESSURE DURING FLOW.

B. MAINLINE PIPING: DOWNSTREAM FROM POINT OF CONNECTION (P.O.C.) TO THE WATER DISTRIBUTION PIPING TO, AND INCLUDING, CONTROL VALVES. PIPING IS UNDER WATER-DISTRIBUTION-SYSTEM PRESSURE.

1.05 SUBMITTALS

A. AS-BUILT DRAWINGS: INCLUDE LOCATION, TYPE, SIZE AND DESIGN DATA.
1. PIPING LAYOUT TO WATER SOURCE OR POINT OF CONNECTION, PIPE TYPES, SIZES, CAPACITIES, AND FLOW CHARACTERISTICS
2. LOCATION OF SLEEVES UNDER PAVEMENT
3. LOCATION AND COVERAGE OF SPRINKLER HEADS, NOZZLES, AND OUTLET DEVICES
4. ALL VALVES, HOSE BIBBS AND OTHER ACCESSORIES
5. CONTROLLER AND WIRING; SHOW WIRE SIZE AND NUMBER OF CONDUCTORS FOR EACH CONTROL CABLE
6. PLANT AND LANDSCAPING FEATURES, SITE STRUCTURES
7. SCHEDULE OF FITTINGS TO BE USED.

B. PRODUCT DATA: INCLUDE PRESSURE RATINGS, RATED CAPACITIES, AND SETTINGS OF SELECTED MODELS FOR THE FOLLOWING:
1. SPECIALTY VALVES.
2. VALVE BOXES.
3. SPRINKLERS.
4. IRRIGATIONS SPECIALTIES AND ACCESSORIES

C. FIELD QUALITY-CONTROL TEST REPORTS.

D. OPERATION AND MAINTENANCE DATA.

1.06 QUALITY ASSURANCE

A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.

B. WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE UTILITY SUPPLYING WATER.

C. INSTALLER'S QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER WHO HAS INSTALLED IRRIGATION SYSTEMS FOR A MINIMUM OF 5 YEARS AND WHO HAS SUCCESSFULLY COMPLETED IRRIGATION SYSTEMS SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT.

1.07 PROJECT CONDITIONS

A. SITE INSPECTIONS: VERIFY PROJECT SITE CONDITIONS AND NOTE IRREGULARITIES AFFECTING WORK OF THIS SECTION. REPORT IRREGULARITIES TO THE ENGINEER PRIOR TO BEGINNING WORK.
1. BEGINNING WORK OF THIS SECTION IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.
2. THE OWNER ASSUMES NO RESPONSIBILITY FOR INTERPRETATIONS OR CONCLUSIONS DRAWN FROM THIS INFORMATION.
3. CONDUCT ALL NECESSARY SITE INSPECTIONS AND INVESTIGATIONS FOR THE PROPER INSTALLATION OF THE SPECIFIED WORK.

B. UTILITY LOCATIONS: ARRANGE FOR AND COORDINATE WITH THE ENGINEER FOR THE LOCATION OF ALL UNDERGROUND UTILITIES. REPAIR ANY UNDERGROUND UTILITIES DAMAGED DURING CONSTRUCTION.

1.08 SEQUENCING AND SCHEDULING

A. COORDINATE IRRIGATION SYSTEMS WORK WITH LANDSCAPE AND OTHER SITE WORK.

1.09 SHIPPING, HANDLING AND STORAGE

A. SHIPPING: COMPONENTS SHALL BE PACKAGED TO PROTECT AGAINST DAMAGE FROM SHIPPING, HANDLING, AND TRANSIT. COVER ALL PIPE OPENINGS TO PREVENT THE ENTRY OF FOREIGN MATERIAL. ISOLATE SOLVENTS FROM OTHER SYSTEM MATERIALS TO AVOID DAMAGE FROM SPILLAGE OR LEAKAGE.

B. HANDLING:
1. PIPE AND FITTINGS: DO NOT BUMP, SCRAPE OR DROP. DO NOT USE CHAINS, HOOKS, CABLES, AND OTHER DEVICES THAT CAN DAMAGE PIPE AND FITTINGS.

C. STORAGE:
1. GENERAL: PROVIDE PROPER STORAGE OF SYSTEM MATERIALS.
2. PIPE: STORE PIPES SUPPORTED OFF THE GROUND FOR THE FULL LENGTH OF PIPE AND IN A MANNER THAT WILL PREVENT PIPE DISTORTION AND ACCIDENTAL MOTION.
3. NON-METALLIC PIPE AND FITTINGS: PROTECT FROM EXPOSURE TO DIRECT SUNLIGHT DURING STORAGE AND MINIMIZE EXPOSURE TO SUNLIGHT DURING INSTALLATION.

1.10 EXTRA MATERIALS

A. FURNISH EXTRA MATERIALS DESCRIBED BELOW THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABELS DESCRIBING CONTENTS.
1. TURF SPRAYS: TWO EACH OF EACH BODY AND NOZZLE TYPE.
2. TURF MULTI-STREAM ROTORS: TWO EACH OF EACH BODY AND NOZZLE TYPE.

1.11 WARRANTY

A. COMPLETE ALL WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS AND WARRANT MATERIALS AND WORKMANSHIP TO BE FREE FROM DEFECTS FOR THE PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE.

B. REPAIR OR REPLACE ALL DEFECTS IN MATERIAL OR WORKMANSHIP, AND ANY DAMAGE RESULTING FROM THE REPAIRING OF SUCH DEFECTS THAT MAY DEVELOP DURING THE WARRANTY PERIOD AT NO ADDITIONAL COST TO THE OWNER.
1. MAKE SUCH REPAIRS OR REPLACEMENTS WITHIN THREE DAYS OF WRITTEN NOTIFICATION BY THE OWNER.
2. OWNER RESERVES THE RIGHT UNDERTAKE REPAIRS AND REPLACEMENT, AT THE CONTRACTORS EXPENSE, FOR REPAIRS AND REPLACEMENT NOT COMPLETE WITHIN THREE DAYS OF NOTIFICATION.

1.12 DAMAGE TO PROPERTY

A. REPAIR PROPERTY DAMAGED BY DEFECTIVE IRRIGATION MATERIAL, POOR WORKMANSHIP OR NEGLIGENCE OF CONTRACTOR AND HIS EMPLOYEES AT CONTRACTOR'S EXPENSE AND RESTORE TO ITS ORIGINAL CONDITION AND TO THE SATISFACTION OF ARCHITECT.

1.13 MAINTENANCE SERVICE

A. MAINTAIN THE IRRIGATION SYSTEM FOR THE MAINTENANCE PERIOD OF 90 DAYS.

B. MAINTENANCE WORK:
1. MAINTAIN BY APPLYING STANDARD INDUSTRY PRACTICES, KEEPING THE SYSTEM FULLY OPERATIONAL AND ADJUSTED AT ALL TIMES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
a. ADJUST REMOTE CONTROL VALVE PRESSURE REGULATOR AND FLOW CONTROL AS REQUIRED.
b. ADJUST NOZZLES TO MAINTAIN COVERAGE AND ADEQUATE SOIL MOISTURE.
2. WATER CONSERVATION: PROGRAM AND ADJUST EQUIPMENT TO APPLY WATER IN AN EFFICIENT AND WATER CONSERVING MANNER AND TO MINIMIZE WASTE FROM OVER WATERING AND RUNOFF.

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS

A. SLEEVING:
1. PROVIDE RIGID, UNPLASTICIZED POLYVINYL CHLORIDE (PVC) 1120, TYPE 1, GRADE 1, NSF APPROVED PIPE, EXTRUDED FROM MATERIAL MEETING THE REQUIREMENTS OF ASTM D 1785.
2. PROVIDE SCHEDULE 40 SOLVENT WELD PIPE FOR SLEEVING.
3. PROVIDE SCHEDULE 40, TYPE 1, PVC SOLVENT WELD FITTINGS CONFORMING TO ASTM D 2466 AND ASTM D 1784.
4. PROVIDE PRIMER APPROVED BY PIPE MANUFACTURER AND SOLVENT CEMENT CONFORMING TO ASTM D 2564.

B. MAINLINE PIPE AND FITTINGS:
1. PROVIDE RIGID, UNPLASTICIZED POLYVINYL CHLORIDE (PVC) 1120, TYPE 1, GRADE 1, NSF APPROVED PIPE, EXTRUDED FROM MATERIAL MEETING THE REQUIREMENTS OF ASTM D 1785.
2. PROVIDE SCHEDULE 40 SOLVENT WELD PIPE FOR MAINLINE PIPING.
3. PROVIDE SCHEDULE 40, TYPE 1, PVC SOLVENT WELD FITTINGS CONFORMING TO ASTM D 2466 AND ASTM D 1784.
4. PROVIDE PRIMER APPROVED BY PIPE MANUFACTURER AND SOLVENT CEMENT CONFORMING TO ASTM D 2564.

C. LATERAL PIPE AND FITTINGS:
1. PROVIDE RIGID, UNPLASTICIZED POLYVINYL CHLORIDE (PVC) 1120, TYPE 1, GRADE 1, NSF APPROVED PIPE, EXTRUDED FROM MATERIAL MEETING THE REQUIREMENTS OF ASTM D 1785.
2. PROVIDE SCHEDULE 40 SOLVENT WELD PIPE FOR LATERAL PIPING.
3. PROVIDE SCHEDULE 40, TYPE 1, PVC SOLVENT WELD FITTINGS CONFORMING TO ASTM D 2466 AND ASTM D 1784.
4. PROVIDE PRIMER APPROVED BY PIPE MANUFACTURER AND SOLVENT CEMENT CONFORMING TO ASTM D 2564.

D. SWING JOINTS AND RISERS:
1. NIPPLES:
a. PROVIDE RIGID, UNPLASTICIZED POLYVINYL CHLORIDE (PVC) 1120, TYPE 1, GRADE 1, NSF APPROVED PIPE, EXTRUDED FROM MATERIAL MEETING THE REQUIREMENTS OF ASTM D 1785, UNIFORMLY GRAY IN COLOR
b. PROVIDE SCHEDULE 80 THREADED NIPPLES CONFORMING TO ASTM D 2464 AND ASTM D 1784.
2. FITTINGS:
a. PROVIDE SCHEDULE 40, TYPE 1, PVC SOLVENT WELD FITTINGS CONFORMING TO ASTM D 2466 AND ASTM D 1784.
b. PROVIDE SCHEDULE 40, TYPE 1, PVC THREADED, SOCKET, OR BOTH TYPE FITTINGS CONFORMING TO ASTM D 2466 AND ASTM D 1784.
c. PROVIDE PRIMER APPROVED BY PIPE MANUFACTURER AND SOLVENT CEMENT CONFORMING TO ASTM D 2564.

E. COPPER PIPE:
1. TYPE K CONFORMING TO ASTM B 42.

F. GALVANIZED STEEL PIPE:
1. STANDARD WEIGHT, SEAMLESS OR WELDED, GALVANIZED, CONFORMING TO ASTM A 53.

2.02 REMOTE CONTROL VALVES (RCV)

A. INDUSTRIAL-STRENGTH GLASS-FILLED NYLON GLOBE VALVES FOR COMMERCIAL USE, WITH PRESSURE REGULATING MODULE; MANUFACTURER, MODEL, SIZE AS SHOWN ON DRAWINGS.

B. BOXES FOR RCV:
1. TYPE: RECTANGULAR PLASTIC HINGED COVER WITH BOLT DOWN LOCK KIT, CARSON 1914-2 OR APPROVED EQUAL.
2. COLOR: GREEN.

2.03 SPRINKLER HEADS AND NOZZLES

A. SPRINKLER HEADS AND NOZZLES: PLASTIC, PRESSURE COMPENSATING; MANUFACTURER, MODEL, SIZE AS SHOWN ON DRAWINGS.

2.04 CONTROL SYSTEM

A. CONTROLLER:
1. EXISTING.

B. CONTROL WIRES:
1. PROVIDE AWG NO. 14, SOLID CONDUCTOR, TYPE UF, UL-APPROVED FOR UNDERGROUND DIRECT BURIAL FOR CONTROL WIRE FROM THE CONTROLLER TO EACH REMOTE CONTROL VALVE.
2. PROVIDE AWG NO. 12, SOLID CONDUCTOR, TYPE UF, UL-APPROVED FOR UNDERGROUND DIRECT BURIAL FOR COMMON WIRE.
3. COLOR: PROVIDE WHITE FOR COMMON GROUND WIRE, RED FOR CONTROL WIRES, AND GREEN FOR SPARE CONTROL WIRE(S).
4. SPLICES: PROVIDE 3M DBY WIRE CONNECTORS.
5. WARNING TAPE: INERT PLASTIC FILM HIGHLY RESISTANT TO ALKALIS, ACIDS, OR OTHER DESTRUCTIVE CHEMICAL COMPONENTS LIKELY TO BE ENCOUNTERED IN SOILS.
6. PROVIDE 3-INCH WIDE, COLORED YELLOW, AND IMPRINTED WITH "CAUTION: BURIED ELECTRIC LINE BELOW".

C. BOXES FOR CONTROL WIRE SPLICES:
1. TYPE: 10-INCH ROUND PLASTIC, WITH BOLT DOWN LOCK KIT, CARSON 910-3 OR APPROVED EQUAL.
2. COLOR: GREEN.

2.05 MISCELLANEOUS INSTALLATION MATERIALS

A. PIPE JOINT COMPOUND: TEFLON TAPE.

B. PIPE COATINGS FOR BELOW GRADE STEEL PIPE AND FITTINGS: KOOPERS BITUMASTIC 300-M COAL TAR EPOXY, 50 MIL POLYETHYLENE TAPE; WRAP TO 6 INCHES ABOVE GRADE.

C. PROVIDE OTHER ANCILLARY MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE ASSEMBLIES AND THE SYSTEMS TO FULLY OPERATIONAL CONDITION.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

A. PIPING LAYOUT INDICATED IS DIAGRAMMATIC ONLY. ROUTE PIPING TO AVOID PLANTS AND STRUCTURES.

3.02 EXCAVATION, TRENCHING, AND BACKFILLING

A. TRENCH IN ACCORDANCE WITH SECTION 02300.

B. EXCAVATE TO PERMIT THE PIPES TO BE LAID AT INTENDED ELEVATIONS AND TO PERMIT WORK SPACE FOR INSTALLING CONNECTIONS AND FITTINGS.

C. MINIMUM COVER (DISTANCE FROM TOP OF PIPE OR CONTROL WIRE TO FINISH GRADE) AS FOLLOWS:
1. 18 INCHES OVER MAINLINE PIPE.
2. 18 INCHES OVER CONTROL WIRE AND OVER ELECTRICAL CONDUIT.
3. 12 INCHES OVER LATERAL PIPE TO SPRAY SPRINKLERS, BUBBLERS AND EMITTERS.

D. BACKFILL ONLY AFTER LINES HAVE BEEN INSPECTED AND TESTED.

E. EXCAVATED MATERIAL IS GENERALLY SATISFACTORY FOR BACKFILL.
1. USE ONLY BACKFILL FREE FROM RUBBISH, VEGETATIVE MATTER, AND STONES LARGER THAN 2 INCHES IN MAXIMUM DIMENSION.
2. USE BACKFILL FREE OF SHARP OBJECTS WHICH MAY DAMAGE THE PIPE
3. REMOVE MATERIAL NOT SUITABLE FOR BACKFILL.

F. BACKFILL FOR PIPE NOT IN SLEEVE BY ONE OF THE FOLLOWING METHODS:
1. BACKFILL AND PUDDLE LOWER HALF OF TRENCH. ALLOW TO DRY 24 HOURS. BACKFILL REMAINDER OF TRENCH IN 6-IN. LAYERS. COMPACT EACH TO DENSITY OF SURROUNDING SOIL.
2. BACKFILL REST OF TRENCH BY DEPOSITING THE BACKFILL MATERIAL EQUALLY ON BOTH SIDES OF PIPE IN 6-IN. LAYERS AND COMPACTING EACH TO DENSITY OF SURROUNDING SOIL.

G. ENCLOSE PIPE AND WIRING BENEATH HARDSCAPE STRUCTURES, ROADWAYS, WALKS, CURBS, ETC., IN SLEEVES. MINIMUM COMPACTION OF BACKFILL FOR SLEEVES SHALL BE 95 PERCENT STANDARD PROCTOR DENSITY IN ACCORDANCE WITH ASTM D 698. USE OF WATER FOR COMPACTION AROUND SLEEVES BY "PUDDLING" METHOD IS NOT ACCEPTABLE.

H. DRESS BACKFILLED AREAS TO ORIGINAL GRADE.

I. WHERE UTILITIES CONFLICT WITH IRRIGATION TRENCHING AND PIPE WORK, CONTACT THE ENGINEER FOR TRENCH DEPTH ADJUSTMENTS.

3.03 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. REMOVE CAPS ONLY WHEN NECESSARY TO CONTINUE ASSEMBLY.
3. TRENCHES MAY BE CURVED TO CHANGE DIRECTION OR AVOID OBSTRUCTIONS WITHIN LIMITS OF CURVATURE OF PIPE. MAXIMUM OFFSET PER 20-FOOT PIPE LENGTH: 7.5 FEET FOR 2-IN. DIAMETER PIPE AND 2 FEET FOR 2.5 AND 3-IN. DIAMETER PIPE. ALL CURVATURE SHALL RESULT FROM THE BENDING OF THE PIPE LENGTHS. NO DEFLECTION WILL BE ALLOWED AT PIPE JOINTS.

B. SLEEVING:
1. INSTALL SLEEVING AT A DEPTH TO ALLOW ENCASED PIPE OR WIRING TO REMAIN AT SPECIFIED BURIAL DEPTH.
2. EXTEND SLEEVE ENDS 12 INCHES BEYOND EDGE OF PAVED SURFACE. COVER PIPE ENDS AND MARK WITH STAKES OR METAL DISKS.

C. MAINLINE AND LATERAL LINE PIPE AND FITTINGS:
1. USE ONLY STRAP-TYPE FRICTION WRENCHES FOR THREADED PLASTIC PIPE.
2. PVC SOLVENT WELD PIPE:
a. USE PRIMER AND SOLVENT CEMENT. JOIN PIPE AS RECOMMENDED BY 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 TRENCH.
d. FITTINGS: THE USE OF CROSS TYPE FITTINGS IS NOT ACCEPTABLE.

D. SPECIALIZED PIPE AND FITTINGS:
1. PVC THREADED CONNECTIONS:
d. USE ONLY FACTORY-FORMED THREADS. FIELD-CUT THREADS ARE NOT ACCEPTABLE.
e. USE ONLY TEFLON-TYPE TAPE OR TEFLON-BASED PASTE.
f. WHEN CONNECTION IS PLASTIC-TO-METAL, PLASTIC COMPONENT SHALL HAVE MALE THREADS AND METAL COMPONENT SHALL HAVE FEMALE THREADS.
2. MAKE METAL-TO-METAL, THREADED CONNECTIONS WITH TEFLON-TYPE TAPE OR PIPE JOINT COMPOUND APPLIED TO THE MALE THREADS ONLY.

3.04 INSTALLATION OF SPRINKLER AND BUBBLER IRRIGATION COMPONENTS

A. REMOTE CONTROL VALVES FOR SPRINKLER AND BUBBLER LATERALS:
1. FLUSH MAINLINE BEFORE INSTALLATION OF RCV.
2. INSTALL WHERE INDICATED ON THE DRAWINGS. USE WIRE CONNECTORS AND WATERPROOF SEALANT TO CONNECT CONTROL WIRES TO REMOTE CONTROL VALVE WIRES. INSTALL CONNECTORS AND SEALANT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
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 VALVES 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. SPRAY AND BUBBLER ASSEMBLYS:
1. FLUSH LATERAL PIPE BEFORE INSTALLING SPRAY AND BUBBLER ASSEMBLYS.
2. INSTALL SPRAY AND BUBBLER ASSEMBLYS IN ACCORDANCE WITH THE INSTALLATION DETAILS AT LOCATIONS SHOWN ON THE DRAWINGS.

3.05 INSTALLATION OF CONTROL SYSTEM COMPONENTS

A. CONTROLLER:
1. EXISTING

C. CONTROL WIRE:
2. BUNDLE CONTROL WIRES WHERE 2 OR MORE ARE IN THE SAME TRENCH. BUNDLE WITH PIPE WRAPPING TAPE SPACED AT MAXIMUM 10-FOOT INTERVALS.
3. PROVIDE A 24 INCH EXCESS LENGTH OF WIRE IN A 8-INCH DIAMETER LOOP AT EACH 90 DEGREE CHANGE OF DIRECTION, AT BOTH ENDS OF SLEEVES, AND AT 100 FEET INTERVALS ALONG CONTINUOUS RUNS OF WIRING. DO NOT TIE WIRING LOOP. COIL 30 INCH LENGTH OF WIRE WITHIN EACH REMOTE CONTROL VALVE BOX AS SHOWN ON DRAWINGS.
4. INSTALL COMMON GROUND WIRE AND ONE CONTROL WIRE FOR EACH REMOTE CONTROL VALVE. MULTIPLE VALVES ON A SINGLE CONTROL WIRE ARE NOT ACCEPTABLE.
5. IF A CONTROL WIRE MUST BE SPLICED, MAKE SPLICE WITH WIRE CONNECTORS AND WATERPROOF SEALANT AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. LOCATE SPLICE IN A VALVE BOX WHICH CONTAINS AN IRRIGATION VALVE ASSEMBLY, OR IN A SEPARATE 10-INCH ROUND VALVE BOX. USE SAME PROCEDURE FOR CONNECTION TO VALVES AS FOR IN LINE SPLICES.
6. UNLESS OTHERWISE SHOWN, INSTALL WIRE PARALLEL WITH AND BELOW MAINLINE PIPE.
7. PROTECT WIRE NOT INSTALLED WITH PVC MAINLINE PIPE WITH A CONTINUOUS RUN OF WARNING TAPE PLACED IN THE BACKFILL AT 6-INCHES ABOVE THE WIRING.

3.06 INSTALLATION OF OTHER COMPONENTS

A. PROVIDE OTHER ANCILLARY MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE ASSEMBLIES AND SYSTEMS TO FULLY OPERATIONAL CONDITION. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3.07 TESTING

A. NOTIFY THE ARCHITECT 7 DAYS IN ADVANCE OF TESTING.

B. PIPELINES JOINTED WITH SOLVENT-WELDED PVC JOINTS SHALL BE ALLOWED TO CURE AT LEAST 24 HOURS BEFORE TESTING.

C. SUBSECTIONS OF MAINLINE PIPE MAY BE TESTED INDEPENDENTLY, SUBJECT TO THE ARCHITECT'S APPROVAL.

D. FURNISH CLEAN, CLEAR WATER, PUMPS, LABOR, FITTINGS, AND EQUIPMENT NECESSARY TO CONDUCT TESTS.

E. HYDROSTATIC PRESSURE TEST:
1. SUBJECT MAINLINE PIPE TO A HYDROSTATIC PRESSURE EQUAL TO 1.5 TIMES THE ANTICIPATED OPERATING PRESSURE (MIN. 140 PSI) FOR 2 HOURS. TEST WITH MAINLINE COMPONENTS INSTALLED.
2. SUBJECT LATERAL PIPE TO A HYDROSTATIC PRESSURE EQUAL TO ANTICIPATED OPERATING PRESSURE. TEST WITH RISERS FOR SPRINKLERS CAPPED.
3. BACKFILL TO PREVENT PIPE FROM MOVING UNDER PRESSURE. EXPOSE COUPLINGS AND FITTINGS.
4. LEAKAGE WILL BE DETECTED BY VISUAL INSPECTION. REPLACE DEFECTIVE PIPES, FITTINGS, JOINTS, VALVES, OR APPURTENANCES. REPEAT TEST UNTIL PIPE PASSES TEST.
5. USE OF CEMENT OR CAULKING TO SEAL LEAKS IS PROHIBITED.

F. OPERATIONAL TEST:
1. ACTIVATE EACH REMOTE CONTROL VALVE IN SEQUENCE FROM CONTROLLER. THE ARCHITECT WILL VISUALLY OBSERVE OPERATION AND WATER APPLICATION PATTERNS.
2. REPLACE ANY DEFECTIVE REMOTE CONTROL VALVE, SOLENOID, WIRING, OR APPURTENANCE TO CORRECT OPERATIONAL DEFICIENCIES.
3. REPLACE, ADJUST, OR MOVE WATER EMISSION DEVICES TO CORRECT OPERATIONAL OR COVERAGE DEFICIENCIES.
4. REPLACE DEFECTIVE PIPES, FITTINGS, JOINTS, VALVES, SPRINKLERS, OR APPURTENANCES TO CORRECT LEAKAGE PROBLEMS. CEMENT OR CAULKING TO SEAL LEAKS IS PROHIBITED.
5. REPEAT TESTS UNTIL EACH LATERAL PASSES ALL TESTS.

3.08 DEMONSTRATION

A. DEMONSTRATE TO THE OWNER'S MAINTENANCE PERSONNEL THE OPERATION OF ALL EQUIPMENT (EXISTING AND NEW), WATER EMISSION DEVICES, SPECIALTIES, AND ACCESSORIES. REVIEW OPERATING AND MAINTENANCE INFORMATION.

B. NOTIFY THE ARCHITECT 7 DAYS IN ADVANCE OF DEMONSTRATION.

3.09 PROJECT RECORD (AS-BUILT) DRAWINGS

A. MAINTAIN ON THE PROJECT SITE AND SEPARATE FROM DOCUMENTS USED FOR CONSTRUCTION, ONE COMPLETE SET OF CONTRACT DOCUMENTS AS PROJECT DOCUMENTS. KEEP DOCUMENTS CURRENT. DO NOT BACKFILL TRENCHES AND EXCAVATIONS UNTIL AS-BUILT INFORMATION IS RECORDED.

B. RECORD PIPE AND WIRING NETWORK ALTERATIONS. RECORD WORK THAT IS INSTALLED DIFFERENTLY THAN SHOWN ON THE DRAWINGS. RECORD ACCURATE REFERENCE DIMENSIONS, MEASURED FROM AT LEAST TWO PERMANENT REFERENCE POINTS, OF EACH IRRIGATION SYSTEM VALVE, BACKFLOW PREVENTION DEVICE, SATELLITE CONTROLLER, SLEEVE END, WIRING CONNECTIONS, AND OTHER IRRIGATION COMPONENTS ENCLOSED WITHIN A VALVE BOX.

3.10 CLEAN UP

A. UPON COMPLETION OF WORK, REMOVE FROM PROJECT SITE ALL MACHINERY, TOOLS, EXCESS MATERIALS, AND RUBBISH.

3.11 MAINTENANCE

A. INTERIM MAINTENANCE: PROGRAM AND MAINTAIN THE SYSTEM IN FULL OPERATIONAL CONDITION FOR IRRIGATING PLANTS UNTIL DATE OF SUBSTANTIAL COMPLETION IN ACCORDANCE WITH SECTION 02900.

B. 90 DAY MAINTENANCE PERIOD: IN ACCORDANCE WITH SECTION 02900 AND SECTION 02940.

END OF SECTION

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REGISTERED LANDSCAPE ARCHITECT
LIC. #4038
ANN SEVER
(SIGNATURE)
STATE OF CALIFORNIA

SIGNATURE

DATE SIGNED

RTA TRANSIT CENTER
IRRIGATION SPECIFICATIONS
SAN LUIS OBISPO, CA

JOB #: 1307-0003
DESIGNERS: EAS
DRAWN BY: EAS
DATE: 03/15/19

DRAWING NO.
IR1.2
12 OF 20 SHEETS

FILE NAME: 1307-0003 LIRR-SPEC.DWG

ELECTRICAL PLAN CONVENTIONS

DETAIL CALL-OUT/REFERENCE
- # — DETAIL NO.
- SHEET — PLAN REFERENCE NO.

REFERENCE NOTE CALL-OUT
- # — NUMBERED SHEET NOTE
- A — LUMINAIRE DESIGNATION
- 1a,b — BRANCH CIRCUIT, SWITCHLEG(S)

FEEDER DESIGNATION
- F# — FEEDER DESIGNATION NO. REFERS TO FEEDER SCHEDULE INCLUDED ON THE SINGLE LINE DIAGRAM. SCHEDULE NOTES FEEDER SPECIFICATION, CONDUIT SPECIFICATION, AND ROUTING.
- 1 — BRANCH CIRCUIT DESIGNATION

EQUIPMENT DESIGNATION
- M#, P#, FS# — EQUIPMENT DESIGNATION: "M" - MECHANICAL, "P" - PLUMBING, "FS" - FOOD SERVICE

ELECTRICAL ABBREVIATIONS

- A -		GC	GENERAL CONTRACTOR	O&M	OPERATION & MAINTENANCE
A	AMPERE	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	OSA	OFFICE OF THE STATE ARCHITECT
ABV	ABOVE	GFI	GROUND FAULT CIRCUIT INTERRUPTER	OSHPD	OFFICE of STATEWIDE HEALTH PLANNING & DEVELOPMENT
AC	ALTERNATING CURRENT	GND	GROUND	OVLD	OVERLOAD
ADJ	ADJACENT	GRS	GALVANIZED RIGID STEEL	- P -	
AFS	FUSED SWITCH AMPERAGE RATING	GWS	GANG WITH SWITCH	P	POLE
AFF	ABOVE FINISH FLOOR	- H -		PA	PUBLIC ADDRESS
AFG	ABOVE FINISH GRADE	H	HEIGHT	PB	PULLBOX
AHJ	AUTHORITY HAVING JURISDICTION	HID	HIGH INTENSITY DISCHARGE	PC	PHOTOCELL
AIC	AMPERES INTERRUPTING CAPACITY	HO	HIGH OUTPUT	PC	PLUMBING CONTRACTOR
AL	ALUMINUM	HOA	HAND-OFF-AUTO	ph	PHASE
APCD	AIR POLLUTION CONTROL DISTRICT	hp	HORSEPOWER	PNL	PANEL
ATS	AUTOMATIC TRANSFER SWITCH	HPF	HIGH POWER FACTOR	POC	POINT OF CONNECTION
AV	AUDIBLE/AUDIO VISUAL	HPS	HIGH PRESSURE SODIUM	- R -	
AWG	AMERICAN WIRE GAGE	- I -		(R)	RELOCATE(D)
- B -		ID	IDENTIFICATION	RECEPT	RECEPTACLE
BFG	BELOW FINISH GRADE	IG	ISOLATED GROUND	REQ'D	REQUIRED
BLDG	BUILDING	IBC	INTERNATIONAL BUILDING CODE	RLA	RUNNING/RATED LOAD AMPS
- C -		- J -		RM	ROOM
C	CONDUIT	J-BOX	JUNCTION BOX	RMC	RIGID METAL CONDUIT
CA	CALIFORNIA	- K -		RMV	REMOVE
CATV	CABLE TELEVISION	K	KILO	RPLC	REPLACE
CB	CIRCUIT BREAKER	kVA	KILOVOLTAMPS	RS	RAPID START
CBC	CA BUILDING CODE	kW	KILOWATT	- S -	
CEC	CA ELECTRICAL CODE	- L -		SC	SIGNAL CABINET
CF	COMPACT FLUORESCENT	LC	LIGHTING CONTROL	SCC	SHORT CKT CURRENT
CFC	CA FIRE CODE	LRA	LOCKED ROTOR AMPS	SFM	STATE FIRE MARSHAL
CLG	CEILING	LS	LIFE SAFETY BRANCH	SHT	SHEET
CL	CENTER LINE	LT	LIGHT	SL	SWITCH LEG
CKT	CIRCUIT	LTG	LIGHTING	SPEC	SPECIFICATION
CNT'R	CONTRACTOR	LV	LOW VOLTAGE	SPST	SINGLE POLE SINGLE THROW SQ
C.O.	CONDUIT ONLY (W/PULLROPE)	- M -		SQ	SQUARE
CR	CRITICAL BRANCH	MC	MECHANICAL CONTRACTOR	SURF	SURFACE SERVICE
CSFM	CALIFORNIA SFM	MCA	MINIMUM CKT AMPS	SVC	SERVICE
CT	CURRENT TRANSFORMER	MCB	MAIN CIRCUIT BREAKER	SW	SWITCH
Cu	COPPER	MECH	MECHANICAL	- T -	
- D -		MFR	MANUFACTURER	T	TRANSFORMER
(D)	DEMOLITION / DEMOLISH	MFS	MAIN FUSIBLE SWITCH	TBR	TO BE REMOVED
D	DEPTH	MH	METAL HALIDE	TC	TIME CLOCK
DSA	DEPARTMENT OF THE STATE ARCHITECT	MLO	MAIN LUGS ONLY	TEL	TELEPHONE
DC	DIRECT CURRENT	MOCP	MAXIMUM OCP	TS	TIME SWITCH
DIA	DIAMETER	MPOE	MAIN POINT OF ENTRY	TSP	TWISTED SHIELDED PAIR
DPST	DOUBLE POLE SINGLE THROW	MSB	MAIN SWITCHBOARD	TTB	TELEPHONE TERMINAL BOARD
- E -		MT	MOUNT	TTC	TELEPHONE TERMINAL CABINET
(E)	EXISTING	MT HT	MOUNTING HEIGHT	TX	TRANSFORMER TYP
EM	EMERGENCY	MTS	MANUAL TRANSFER SWITCH	TYP	TYPICAL
EMT	ELECTRIC METALLIC TUBING	MTTB	MAIN TELEPHONE TERMINAL BOARD	- U -	
EC	ELECTRICAL CONTRACTOR	MTTC	MAIN TELEPHONE TERMINAL CABINET	UC	UNDERCABINET OR UNDERCOUNTER
ELEC	ELECTRICAL	- N -		UG	UNDERGROUND
EOL	END OF LINE RESISTOR	(N)	NEW	UGPS	UNDERGROUND PULL SECTION
EOR	ENGINEER OF RECORD	N	NEUTRAL CONDUCTOR	UL	UNDERWRITERS LABORATORIES
(EXN)	EXISTING IN NEW LOCATION	N3R	NEMA 3R	UON	UNLESS OTHERWISE NOTED
(EXR)	EXISTING TO BE RELOCATED	NAT'L	NATIONAL	USA	UG SVC ALERT
- F -		NC	NORMALLY CLOSED	- V -	
(F)	FUTURE	NEC	NATIONAL ELECTRICAL CODE	V	VOLT
FACP	FIRE ALARM CONTROL PANEL	NEMA	NAT'L ELEC MANUFACTURER'S ASSOC	VA	VOLT AMPERES
FAT	FIRE ALARM TERMINAL	NIC	NOT IN CONTRACT	VAC	VOLT ALTERNATING CURRENT
FBO	FURNISHED BY OTHERS	NL	NIGHT LIGHT	VOLT	VOLTAGE
FLA	FULL LOAD AMPS	NO	NORMALLY OPEN, NUMBER	VR	VANDAL-RESISTANT
FLR	FLOOR	NPF	NORMAL POWER FACTOR	- W -	
FLUOR	FLUORESCENT	NTS	NOT TO SCALE	W	WIDTH OR WATT
FF	FUSES FOR	- O -		WIU	WHILE-IN-USE
FS	FUSIBLE SWITCH	OC	ON CENTER	WP	WEATHERPROOF
FVNR	FULL VOLTAGE NON-REVERSING	OCP	OVERCURRENT PROTECTION	- X -	
- G -		OD	OUTSIDE DIAMETER	XFMR	TRANSFORMER
G	GROUNDING CONDUCTOR	OH	OVERHEAD		

ELECTRICAL SYMBOLS

LIGHTING
- CEILING MOUNT LUMINAIRE
- STRIP LIGHT

RACEWAYS & CONDUCTORS
- UNDERGROUND CONDUIT
- CONDUIT (CONCEALED IN STRUCTURE)
- OVERHEAD CONDUCTORS (NOT IN CONDUIT)
- WIREMOLD RACEWAY
- HOMERUN CONDUIT. CROSS MARKS DENOTE NUMBER OF CONDUCTORS - EXAMPLE: 3-HOT AND 1-NEUTRAL. GROUND CONDUCTOR NOT SHOWN.
- CONDUIT TURNS UP (TOWARDS VIEWER)
- CONDUIT TURNS DOWN (AWAY FROM VIEWER)
- CONDUIT STUB (NO MARKER)
- CONDUIT STUB (WITH MARKER)
- CONDUIT SEAL
- CONDUIT CONTINUATION

POWER & COMMUNICATION
- SINGLE RECEPTACLE
- DUPLEX RECEPTACLE
- HALF-SWITCHED DUPLEX RECEPTACLE
- FULLY-SWITCHED RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- SPECIAL PURPOSE RECEPTACLE - THREE PHASE
- SPECIAL PURPOSE RECEPTACLE - SINGLE PHASE
- DEVICE MOUNTED FLUSH IN FLOOR
- DEVICE MOUNTED AT PEDESTAL
- DEVICE MOUNTED ABOVE COUNTER SPLASH
- JUNCTION BOX
- TELEPHONE DEVICE
- COMMUNICATIONS DEVICE (DATA/TEL)
- DISCONNECT SWITCH (FUSED/UN-FUSED)
- COMBINATION MOTOR STARTER/DISCONNECT
- CIRCUIT BREAKER
- FUSIBLE SWITCH
- FUSE
- DRAW-OUT STUBS
- GROUND
- PHASE
- FLUSH MOUNT PANEL
- SURFACE MOUNT PANEL
- SURFACE PANEL WITH WORKING CLEARANCE NOTED
- RELAY
- UTILITY METER
- UTILITY METER WITH CTS

ADA MOUNTING HEIGHTS

DEVICE	MOUNTING HEIGHT	NOTES
PROTRUDING OBJECT (WALL MOUNTED)	LEADING EDGE BETWEEN 27" AND 80" AFF.	OBJECT SHALL NOT PROTRUDE MORE THAN 4" INTO THE CIRCULATION PATH.
RECEPTACLE, COMMUNICATION, TELEPHONE, CATV, ETC.	+15" AFF TO THE BOTTOM OF THE OUTLET BOX.	APPLICABLE TO RECEPTACLES (30 AMPS AND LESS), CONTROLS, AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM PER CBC 11B-308.1.1 (SWITCHES) AND 11B-308.1.2 (RECEPTACLES). OUTLET(S) SHALL BE INSTALLED NO LESS THAN +15" MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISHED FLOOR OR WORKING PLATFORM.
LUMINAIRE SWITCHES	+48" AFF TO THE TOP OF THE OUTLET BOX.	
DEVICES ABOVE A 20"-25" DEEP COUNTER/OBSTRUCTION	+46" (MAX.) TO THE TOP OF THE OUTLET BOX (SIDE APPROACH). +44" (MAX.) TO THE TOP OF THE OUTLET BOX (FORWARD APPROACH).	COORDINATE WITH ARCHITECTURAL PLANS. OBSTRUCTIONS SHALL NOT EXTEND MORE THAN 25" FROM THE WALL BENEATH THE RECEPTACLE/DEVICE.
FIRE ALARM PULL STATIONS	BETWEEN +42" - 48" MAX TO THE TOP OF THE ACTIVATING HANDLE.	
OUTLET BOX FOR THERMOSTAT (BY OTHERS).	BETWEEN +42" - 48" MAX TO THE TOP OF THE OUTLET BOX.	VERIFY WITH MECHANICAL PRIOR TO ROUGH IN.

NOTES
1) DEVICES SHALL MOUNT PER MATRIX ABOVE UNLESS OTHERWISE NOTED PER PLANS.
2) PRIOR TO ROUGH-IN, THE ELECTRICAL CONTRACTOR SHALL VERIFY MOUNTING HEIGHTS FOR DEVICES AND EQUIPMENT CONNECTION LOCATIONS WITH THE ARCHITECT OR OWNER. WHERE DEVICES ARE LOCATED ABOVE COUNTERS AND SHELVING, SPECIAL ATTENTION SHALL BE TO ENSURE OUTLETS AND COVER PLATES DO NOT CONFLICT WITH EDGES OF COUNTER SPLASH, SHELVING TRIM, WAINSCOTING, ETC. CONSULT ARCHITECTURAL DETAILS AND INTERIOR ELEVATIONS, AS THEY SHALL GOVERN WHERE THERE IS CONFLICT WITH ELECTRICAL PLANS.
3) EXCEPTIONS: APPLIANCES (I.E. KITCHEN RANGES, DISHWASHERS, ETC.) WHICH DO NOT HAVE CONTROLS LOCATED ON APPLIANCE.

GENERAL POWER & COMMUNICATION PLAN NOTES

GENERAL
1. DEVICE AND EQUIPMENT FINAL LOCATION SHALL BE FIELD VERIFIED WITH ALL TRADES DURING ROUGH-IN. OBTAIN ACCEPTANCE OF EXACT LOCATIONS WITH ARCHITECT/OWNER REPRESENTATIVES TO AVOID CONFLICT WITH FURNITURE, CASEWORK, ETC.

RECEPTACLES
2. RECEPTACLES INSTALLED IN EXTERIOR LOCATIONS SHALL BE PROVIDED WITH A WEATHERPROOF WHILE-IN-USE COVER (LOCKING AS REQUIRED PER PLANS).

WIRING
3. SEPARATE NEUTRAL CONDUCTORS SHALL BE INSTALLED FOR EACH BRANCH CIRCUIT AS INDICATED PER CONSTRUCTION DOCUMENTS.
4. FEEDERS AND BRANCH CIRCUITS SHALL CARRY A GROUNDING CONDUCTOR, SHALL BE INSTALLED IN EACH CONDUIT/RACEWAY AND SHALL BE BONDED TO THE METALLIC COMPONENTS OF THE RACEWAY SYSTEM. GROUNDING CONDUCTORS SHALL BE SIZED PER THE CONSTRUCTION DOCUMENTS OR CEC REQUIREMENTS, WHICHEVER S GREATER. MAINTAIN THE UNIFORMITY AND CONTINUITY OF THE GROUNDING SYSTEM IN CONDUIT AND RACEWAYS. GROUND CONDUCTORS SHALL BE SIZED AS INDICATED IN CEC TABLE 250.122, UNLESS OTHERWISE NOTED ON THE DRAWINGS. IT SHALL BE PERMITTED TO UTILIZE A SINGLE GROUND CONDUCTOR WHEN BRANCH CIRCUITS ARE COMBINED IN A SINGLE HOMERUN. GROUND CONDUCTOR SHALL BE SIZED FOR THE LARGEST OVERCURRENT DEVICE.

OVERCURRENT PROTECTION
5. THERMAL OVERLOAD PROTECTION SHALL BE PROVIDED FOR ALL MOTORS WHERE REQUIRED PER CEC 430. OVERLOAD PROTECTION MAY BE PROVIDED INTEGRAL TO EQUIPMENT.
6. WHERE INDICATED ON THE CONSTRUCTION DOCUMENTS, FUSIBLE DISCONNECT SWITCHES SHALL BE PROVIDED WITH DUAL ELEMENT TIME DELAY FUSES. FUSES SHALL BE SIZED AS NOTED PER THE CONSTRUCTION DOCUMENTS AND/OR PER MANUFACTURER REQUIREMENTS. VERIFY FUSE SPECIFICATION WITH EQUIPMENT NAMEPLATE INFORMATION DURING SUBMITTAL REVIEW, PRIOR TO PROCUREMENT.

MARKING AND CLEARANCE
7. ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH FIELD OR FACTORY MARKING INDICATING THE POTENTIAL ARC FLASH HAZARDS AS REQUIRED IN CEC 110.16 AND 110.21.
8. WORKING SPACE AT ELECTRICAL EQUIPMENT SHALL BE MAINTAINED AS REQUIRED PER CEC 110.

GENERAL LIGHTING PLAN NOTES

1. LINE VOLTAGE POWERED EXIT SIGNS, EMERGENCY LUMINAIRES, AND EMERGENCY BATTERY PACKS SHALL BE PROVIDED WITH A CONSTANTLY ENERGIZED BRANCH CIRCUIT CONNECTION FOR CHARGING. EXIT SIGNAGE AND EMERGENCY LIGHTING SHALL BE INSTALLED WITH WIRING METHODS COMPLIANT WITH CEC ARTICLE 700.12(F). IN NO INSTANCE SHALL AN EXIT SIGN HAVE A "FEED THROUGH" BRANCH CIRCUIT CONNECTION.
2. BRANCH CIRCUIT CONDUCTORS SHALL BE A MINIMUM OF #12 THWN, UNLESS OTHERWISE NOTED OR REQUIRED BY THE CEC.

CODE COMPLIANCE

THE WORK IDENTIFIED IN THESE PLANS AND SPECIFICATIONS SHALL CONFORM TO AND BE INSTALLED IN COMPLIANCE WITH APPLICABLE CODES, STANDARDS, AND ORDINANCES ENFORCED BY THE LOCAL AUTHORITY HAVING JURISDICTION AT TIME OF PERMITTING. UNLESS OTHERWISE NOTED, CODES, STANDARDS, AND ORDINANCES SHALL BE THE LATEST EDITION WITH CALIFORNIA AND LOCAL JURISDICTION AMENDMENTS AS APPLICABLE. WORK IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED TO CONFLICT WITH ANY STATE LAW, CODE OF REGULATION, LOCAL ORDINANCE, ASSEMBLY BILL, ETC.
- CALIFORNIA CODE OF REGULATIONS TITLE 24
- 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE
- 2016 CALIFORNIA ELECTRICAL CODE
- 2016 CALIFORNIA FIRE CODE
- 2016 CALIFORNIA BUILDING CODE
- CALIFORNIA ACCESSIBILITY CODE

GENERAL NOTES

WORK PERFORMED
1. FURNISH LABOR, MATERIALS, EQUIPMENT, COMPONENTS, TOOLS, TRANSPORTATION TO/FROM THE WORK SITE, AND NECESSARY SERVICES ETC. AS REQUIRED TO SUPPORT AND IMPLEMENT THE ELECTRICAL WORK SHOWN ON THE CONSTRUCTION DOCUMENTS.
2. "PROVIDE" AS USED ON THE CONSTRUCTION DOCUMENTS, IS DEFINED AS "FURNISH AND INSTALL".
3. PERMITS SHALL BE OBTAINED FOR ELECTRICAL WORK. ARRANGE INSPECTIONS WITH THE AHJ AND OBTAIN ACCEPTANCE. CONSULT WITH THE ELECTRICAL INSPECTOR PRIOR TO BEGINNING WORK.
4. ELECTRICAL WORK SHALL BE PERFORMED BY A CALIFORNIA STATE LICENSED ELECTRICIAN.
5. INSTALL EQUIPMENT AT LOCATIONS INDICATED ON THE DRAWINGS AS CLOSELY AS FIELD CONDITIONS PERMIT. OBTAIN ACCEPTANCE OF EQUIPMENT DIMENSIONS PRIOR TO INSTALLATION THROUGH SUBMITTAL REVIEW. CALIFORNIA ELECTRICAL CODE (CEC) MINIMUM WORKING CLEARANCES SHALL BE MAINTAINED.
6. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT REFLECT MINOR VARIATIONS IN EQUIPMENT ALIGNMENT/INSTALLATION THAT MAY BE NECESSARY. REVIEW EXISTING FIELD CONDITIONS AND MAKE PROPER ADJUSTMENTS AS REQUIRED TO AVOID CONFLICT WITH OTHER TRADES OR PORTIONS OF WORK, SATISFY THE DESIGN REQUIREMENTS, AND MEET CODE MINIMUMS. OBTAIN ACCEPTANCE OF ADJUSTMENTS FROM THE ARCHITECT/ENGINEER.
7. DRAWINGS DO NOT SHOW THE EXTENT OF J-BOXES AND PULL BOXES THAT ARE REQUIRED TO IMPLEMENT THE ELECTRICAL WORK. PROVIDE THE QUANTITY OF J-BOXES AND PULL BOXED AS REQUIRED TO IMPLEMENT ELECTRICAL WORK, COMPLY WITH CODE, AND MEET AHJ REQUIREMENTS.
8. NOTIFY THE ARCHITECT/ENGINEER OF DISCREPANCIES WITHIN THE DRAWINGS, THIS SPECIFICATION, AND/OR ACTUAL FIELD CONDITIONS.
9. COORDINATE ELECTRICAL WORK WITH THE WORK OF OTHER TRADES.
10. RACEWAYS WITHIN THE BUILDING SHALL BE CONCEALED, WITH THE EXCEPTION OF EXPOSED STRUCTURE AND WHERE SPECIFICALLY ALLOWED BY THE ARCHITECT/OWNER. WHERE APPROVED, EXPOSED CONDUIT SHALL BE RUN SQUARE AND PLUMB WITH BUILDING LINES AND SHALL BE PROPERLY SUPPORTED PER CODE.
11. EXPOSED CONDUIT BELOW 7' AFF, AND WHERE SUBJECT TO PHYSICAL DAMAGE, SHALL BE INSTALLED IN GRS CONDUIT.
12. WHERE CONDUIT ONLY IS SHOWN ON THE DRAWINGS AND/OR INSTALLED FOR FUTURE PROVISIONS, 1" AND LARGER, INSTALL A NYLON PULL CORD/ROPE.
13. FLUSH MOUNTED PANELBOARDS/LOAD CENTERS SHALL HAVE A MINIMUM OF (1) 3/4" C.O. INSTALLED FROM THE PANEL TO AN ACCESSIBLE CEILING AREA, FOR EVERY FOUR BRANCH CIRCUIT SPARES AND/OR SPACES.

BIDDING
1. PRIOR TO BIDDING, CONSULT PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. IF PROJECT SPECIFICATIONS HAVE NOT BEEN PROVIDED, REQUEST THEM FROM THE ARCHITECT AND/OR ENGINEER OF RECORD.
2. PRIOR TO THE SUBMISSION OF BID REVIEW EXISTING FIELD CONDITIONS AND MAKE PROPER ADJUSTMENTS AS OUTLINED IN THE PROJECT SPECIFICATIONS.
3. OBTAIN ENGINEERING PRE-APPROVAL FOR ALTERNATE PRODUCT AS OUTLINED IN THE PROJECT SPECIFICATIONS.

FINAL ACCEPTANCE
1. COMPLETE ACCEPTANCE TESTING AS REQUIRED PER THE PROJECT SPECIFICATIONS. SUBMIT APPROPRIATE DOCUMENTATION TO THE OWNER, ARCHITECT, AND AHJ.
2. TEST THE ELECTRICAL SYSTEM AND COMPONENTS TO ENSURE PROPER PERFORMANCE. MAKE CORRECTIONS WHERE REQUIRED. DEMONSTRATE SYSTEM PERFORMANCE TO THE OWNER AND OBTAIN ACCEPTANCE.
3. PROVIDE RECORD DRAWINGS PER THE PROJECT SPECIFICATIONS TO THE OWNER.
4. PROVIDE O&M MANUALS PER THE PROJECT SPECIFICATIONS TO THE OWNER.

MATERIAL
1. FURNISHED MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE IN THE CONSTRUCTION DOCUMENTS.
2. FURNISHED MATERIAL, EQUIPMENT, AND FIRE STOP THROUGH PENETRATIONS SHALL BE LISTED BY UL OR AN EQUIVALENT NATIONALLY RECOGNIZED LISTING AGENCY. PRODUCT LISTINGS SHALL BE PROVIDED TO THE EOR AT TIME OF SUBMITTAL REVIEW.
3. FURNISHED MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE TO THE MANUFACTURER REQUIREMENTS, SUBJECT TO REVIEW, INSPECTION, AND APPROVAL BY THE AHJ.

PENETRATIONS
1. CONDUIT PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL MAINTAIN RATINGS AS SPECIFIED IN CBC CHAPTER 7 AND COMPLY WITH LOCAL AHJ REQUIREMENTS. PROVIDE MEANS TO MAINTAIN INTEGRITY OF THE FIRE RATED ASSEMBLY BY PROVIDING THE FOLLOWING A PHYSICAL ENCLOSURE AROUND EQUIPMENT (INCLUDING LUMINAIRES, PANELS, OUTLETS, ETC.) AS APPLICABLE. PENETRATIONS SHALL BE INSTALLED PER APPROVED MANUFACTURER THROUGH-PENETRATION FIRESTOP SYSTEM DETAILS. ELECTRICAL OUTLET BOXES INSTALLED FLUSH IN FIRE RATED ASSEMBLIES SHALL NOT EXCEED 16 SQ. IN., OR MORE THAN 100 SQ. IN. FOR ANY 100SQ. FT. OF WALL.
2. THE PROJECT STRUCTURAL ENGINEER AND ARCHITECT SHALL APPROVE PENETRATION OF STRUCTURAL MEMBERS (INCLUDING BUT NOT LIMITED TO: BEAMS, COLUMNS, FOOTINGS, ETC.), PERFORM WORK IN ACCORDANCE TO STRUCTURAL DETAILS INCLUDED IN THE CONSTRUCTION DOCUMENTS.

EQUIPMENT ANCHORAGE
1. ELECTRICAL EQUIPMENT SHALL BE ANCHORED OR BRACED TO MEET THE HORIZONTAL AND VERTICAL FORCES IDENTIFIED IN THE 2016 CBC AND A.S.C.E. 7-10.
2. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER AND AHJ.
3. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURES ABILITY TO SUPPORT HANGER AND/OR BRACE LOADS DUE TO ELECTRICAL EQUIPMENT.

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REGISTERED PROFESSIONAL ENGINEER
NO. E18927
ELECTRICAL
STATE OF CALIFORNIA
EXPIRES: 12.31.2019
PROJECT #1824

GECE
GRAY ELECTRICAL CONSULTING + ENGINEERING, CORP
2529 PROFESSIONAL PKWY SUITE A - P.O. BOX #368 SANTA MARIA, CA 93455
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RTA TRANSIT CENTER
ELECTRICAL NOTES

JOB #:	1824
DESIGNERS:	TC/HG
DRAWN BY:	TC
DATE:	03/13/2019

DRAWING NO.
E-1

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3

(E) PANEL "O"

TYPE LOAD CENTER
BUS: 225A
120/208V, 1-PHASE, 3W
100A MAIN CIRCUIT BREAKER

EXISTING AIC PANEL & BRANCH CIRCUITS
42 CIRCUIT BREAKER SPACES

Location: ROOM 111 (STORAGE)
Nema: 1
Mounting: SURFACE, FLUSH

NOTES	CIRCUIT	DESCRIPTION	BREAKER	WIRE	LF	VD(%)	PF	TYPE	PHASE A	PHASE B	TYPE	PF	VD(%)	LF	WIRE	BREAKER	DESCRIPTION	CIRCUIT	NOTES
1	1	EXISTING	20/2	-	-	-	-	-			-	-	-	-	-	100/2	(E) MAIN	2	1
1	3	"		-	-	-	-	-			-	-	-	-	-		"	4	1
1	5	EXISTING	20/1	-											-	20/1	EXISTING	6	1
1	7	EXISTING	20/1	-											-	20/1	EXISTING	8	1
1	9	EXISTING	20/1	-											-	20/1	EXISTING	10	1
1	11	EXISTING	20/1	-											-	20/1	EXISTING	12	1
1	13	EXISTING	20/1	-											-	20/1	EXISTING	14	1
1	15	EXISTING	20/1	-											-	20/1	EXISTING	16	1
1	17	EXISTING	20/1	-											-	20/1	EXISTING	18	1
1	19	EXISTING	20/1	-											-	20/1	EXISTING	20	1
1	21	EXISTING	20/1	-											-	20/1	EXISTING	22	1
1	23	EXISTING	20/1	-											-	20/1	EXISTING	24	1
1	25	EXISTING	20/1	-											-	20/1	EXISTING	26	1
1	27	EXISTING	20/1	-							-	-	-	-	-	50/2	(E) PANEL "P"	28	1
1	29	EXISTING	20/1	-							-	-	-	-	-		"	30	1
2,4	31	PANEL "O1"	*/2	-	-	-	-	-		2819								32	
2,4	33	"		-	-	-	-	-	3600									34	
	35																	36	
	37																	38	
	39																	40	
	41																	42	
								SUBTOTAL (VA)	3600	2819									
								CONTINUOUS	0	0									
						AMPS @		120	30	23	CONNECTED LOAD INCLUDES NET LOAD ADDITION ONLY								

PANEL "O1"

TYPE LOAD CENTER
BUS: 100A
120/208V, 1-PHASE, 3W
MAIN LUG ONLY

10K AIC PANEL & BRANCH CIRCUITS
12 CIRCUIT BREAKER SPACES

Location: ROOM 111 (STORAGE)
Nema: 1
Mounting: SURFACE

NOTES	CIRCUIT	DESCRIPTION	BREAKER	WIRE	LF	VD(%)	PF	TYPE	PHASE A	PHASE B	TYPE	PF	VD(%)	LF	WIRE	BREAKER	DESCRIPTION	CIRCUIT	NOTES
2,3	1	TICKET VENDING MACHINE	30/1	3	250	2.8	0.7	G	3600								SPACE	2	
2	3	NEW BUS SHELTERS (OSOS ST)	30/1	8	148	2.6	0.7	C		1672 729	C	0.7	1.8	230	8	20/1	PALM BUS SHELTER & SIGN	4	2
	5	SUB METER VOLTAGE CONNECTION	20/1	12	-	-	-	-									SPACE	6	
	7	SPACE															SPACE	8	
	9	SPACE															SPACE	10	
	11	SPACE															SPACE	12	
								SUBTOTAL (VA)	3600	2401									
								CONTINUOUS	0	418									
						AMPS @		120	30	23	CONNECTED LOAD INCLUDES NET LOAD ADDITION ONLY								

PANEL SCHEDULE NOTES

<u>PANEL SCHEDULE LOAD TYPE INDEX:</u>
"C" = CONTINUOUS LOAD. OPERABLE FOR 3 HOURS OR MORE. LOAD CALCULATED AT 125% OF TOTAL CONNECTED LOAD.
"R" = RECEPTACLE LOAD.
"G"= GENERAL LOAD.

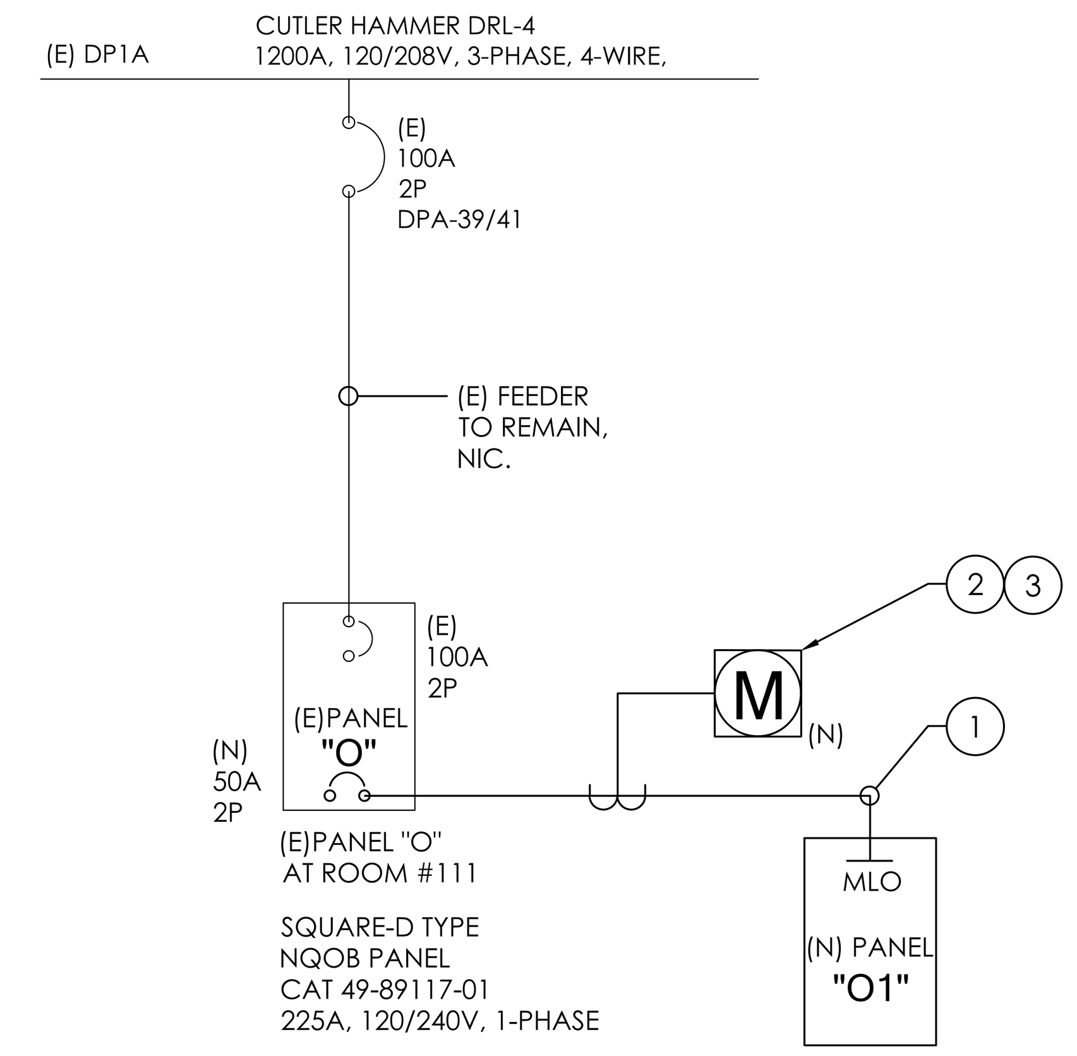
<u>GENERAL NOTES:</u>
- VOLTAGE DROP CALCULATIONS HAVE BEEN PREPARED IN ACCORDANCE TO 2016 CALIFORNIA ELECTRICAL CODE AND CALIFORNIA ENERGY CODE STANDARDS (TITLE 24, ELECTRICAL POWER DISTRIBUTION). CONDUCTOR LENGTH INDICATED SHALL NOT BE USED FOR BIDDING AND PROCUREMENT PURPOSES, FIELD COORDINATE CONDUCTOR LENGTH REQUIRED AND NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES.
- FOR CIRCUITS WITH MULTIPLE LOADS (I.E. RECEPTACLES, LIGHTING) THE CIRCUIT ESTIMATED LENGTH IS DETERMINED BY THE FURTHEST DEVICE LOCATION.
- WHERE BRANCH CIRCUITS HAVE NOT BEEN LOADED TO THE MAXIMUM ALLOWABLE CIRCUIT CAPACITY, VOLTAGE DROP CALCULATIONS HAVE BEEN PREPARED BASED ON CONNECTED LOAD INDICATED, UNLESS OTHERWISE NOTED.

<u>VOLTAGE DROP CALCULATION:</u>

VOLTAGE DROP (%) = (2 x OHMS PER 1000 LF x CONDUCTOR LENGTH x AMPS) / (1000 x QTY OF WIRES PER PHASE)

<u>SCHEDULE SPECIFIC NOTES:</u>

1. EXISTING PANEL LOAD SCHEDULED TO REMAIN, NIC.
2. NEW BRANCH CIRCUIT IN CONTRACT, PROVIDE CIRCUIT BREAKER AND HARDWARE AS MAY BE REQUIRED.
3. WIRE SIZE INCREASED FOR VOLTAGE DROP CONSIDERATION, GROUND WIRE SHALL BE #3 CU. SPLICE BRANCH CIRCUIT WITHIN 5-FEET FROM PANEL "O1" AND TRANSITION WIRE SIZE TO #10 CU TO ACCOMMODATE TERMINATION AT BRANCH CIRCUIT BREAKER AS SPECIFIED.
4. REFER TO SINGLE LINE DIAGRAM (THIS SHEET) FOR SPECIFICATION OF OVERCURRENT PROTECTIVE DEVICE AND FEEDER.



PARTIAL SINGLE LINE DIAGRAM

SCALE: NTS

NOTE: ELEC. DISTRIBUTION IS EXISTING, SCHEDULED TO REMAIN U.O.N.

REFERENCE NOTES

1. INSTALLATION OF NEW FEEDER. PROVIDE (1) 1"C. WITH 3-#6 THWN CU + 1-#10 CU GROUND [EST. 25LF, 0.35%VD, 8,093 AIC].
2. REMOTE METER, NON-UTILITY, SUB-METER. PROVIDE E-MON D-MON CLASS 1000 METER, 320850-SA-KIT (50A RATING).
3. INSTALL PER MANUFACTURER INSTALLATION REQUIREMENTS WITH METER TERMINAL BLOCK CONNECTION TO CURRENT SENSORS PLACED AT EACH PHASE OF PANEL "O1".

SINGLE LINE DIAGRAM GENERAL NOTES

- THE CONTRACTOR SHALL MEET ALL SERVING UTILITY REQUIREMENTS WITH RESPECT TO PROCUREMENT AND INSTALLATION OF THE ELECTRICAL SERVICE. REQUIREMENTS INCLUDE, HOWEVER ARE NOT LIMITED TO THE FOLLOWING:
  --- METER JAW CONFIGURATION SHALL BE AS REQUIRED PER THE SERVING UTILITY.
  --- SERVICE EQUIPMENT UNDERGROUND PULL SECTION SHALL MEET SERVING UTILITY COMPANY REQUIREMENTS.
  --- <u>PG&E TERRITORY ONLY</u>: THE HEIGHT OF THE ELECTRIC METER SHALL NOT BE MORE THAN 75" FROM STANDING FLOOR SURFACE TO THE CENTER LINE OF THE METER. THE MINIMUM METER HEIGHT SHALL BE 36" ABOVE STANDING SURFACE (INTERIOR) AND 48" ABOVE FINISHED GRADE (EXTERIOR).
  --- <u>PG&E TERRITORY ONLY</u>: INTERIOR SERVICE EQUIPMENT SHALL BE EQUIPPED WITH A 2-INCH DIAMETER CONDUIT (EMT OR BETTER WHEN INSTALLED ABOVE GRADE, GRS WHEN INSTALLED UNDERGROUND, UNDERFLOOR, OR IN CONCRETE), WITH PULL ROPE, THE CONDUIT MUST EXTEND FROM THE OUTSIDE SURFACE OF THE BUILDING AND TERMINATE OUTSIDE THE METER PANEL/SWITCHBOARD AT THE TOP OF THE METER SECTION.
  --- <u>PG&E TERRITORY ONLY</u>: INTERIOR AND EXTERIOR SERVICE EQUIPMENT 200KW OR GREATER SHALL HAVE A 1-INCH DIAMETER CONDUIT (EMT OR BETTER WHEN INSTALLED ABOVE GRADE, GRS WHEN INSTALLED UNDERGROUND, UNDERFLOOR, OR IN CONCRETE) EXTENDING FROM THE TELEPHONE-SERVICE LOCATION AND TERMINATING IN THE METER SECTION OF THE PANEL.
- THE CONTRACTOR SHALL OBTAIN SERVING UTILITY COMPANY APPROVAL OF THE SERVICE EQUIPMENT DURING SUBMITTAL REVIEW AND PRIOR TO PROCUREMENT.
- SERIES RATED EQUIPMENT SHALL NOT BE ALLOWED.
- CONDUCTORS SHALL BE THHN/THWN COPPER UNLESS OTHERWISE NOTED. AMPACITY SIZES NOTED ON THE CONSTRUCTION DOCUMENTS ARE BASED ON 75 DEG.
- TERMINALS FOR SWITCHES, CIRCUIT BREAKERS AND OTHER EQUIPMENT, AS SPECIFIED, SHALL BE LISTED AND IDENTIFIED FOR USE WITH 75 DEG. CONDUCTORS.
- FINAL TERMINATIONS OF CONDUCTORS TO ELECTRICAL EQUIPMENT AND DEVICES SHALL NE TORQUE-WRENCH TIGHTENED TO THE MANUFACTURER RECOMMENDED SPECIFICATION.
- THE MAIN CIRCUIT BREAKER SHALL BE 100% RATED PER THE VALUE NOTED.
- THE ELECTRICAL DISTRIBUTION DESIGN SHOWN IS BASED ON EATON / CUTLER - HAMMER PRODUCT. ENGINEER-APPROVED EQUAL PRODUCT OF AN ALTERNATE MANUFACTURER WILL BE ACCEPTABLE. HOWEVER, THIS DETERMINATION WILL BE MADE DURING THE SUBMITTAL REVIEW PROCESS. ALTERNATE PRODUCT SHALL NOT BE USED AS BASIS OF A BID WITHOUT PRE-APPROVAL FROM THE ENGINEER. THE CONTRACTOR SHALL SUBMIT A FORMAL PRE-BID SUBMITTAL IN ACCORDANCE TO THE GENERAL CONDITIONS OF THE PROJECT SPECIFICATIONS.
- VOLTAGE DROP CALCULATIONS HAVE BEEN PREPARED IN ACCORDANCE TO 2013 NON RESIDENTIAL STANDARDS (TITLE 24, ELECTRICAL POWER DISTRIBUTION). CONDUCTOR LENGTH SHALL INDICATED SHALL NOT BE USED FOR BIDDING AND PROCUREMENT PURPOSES. FIELD COORDINATE CONDUCTOR LENGTH REQUIRED AND NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES.
- FAULT CURRENT CALCULATIONS
  -- <u>MARKING</u>: SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKING(S) SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENTS INVOLVED.
  -- <u>MODIFICATIONS</u>: WHEN MODIFICATIONS TO THE ELECTRICAL INSTALLATION OCCUR, THAT AFFECT THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SERVICE, THE MAXIMUM AVAILABLE FAULT CURRENT SHALL BE VERIFIED OR RE-CALCULATED AS NECESSARY TO ENSURE THE SERVICE EQUIPMENT INTERRUPTING RATINGS ARE SUFFICIENT FOR THE MAXIMUM AVAILABLE FAULT CURRENT AT THE LINE TERMINALS OF THE EQUIPMENT. FIELD MARKINGS SHALL BE ADJUSTED TO REFLECT THE NEW LEVEL OF MAXIMUM AVAILABLE FAULT CURRENT.

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PROJECT #1824

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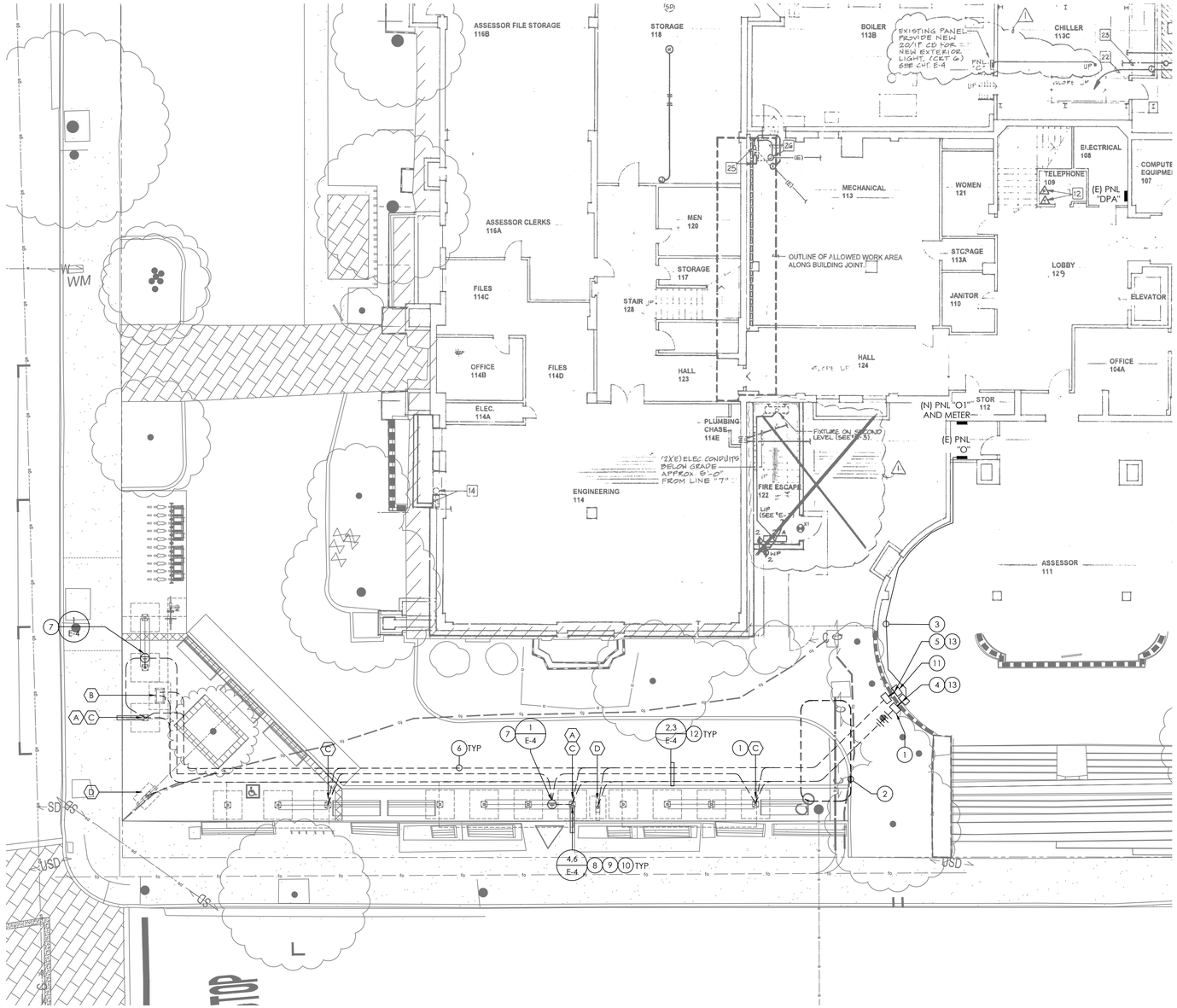
RTA TRANSIT CENTER
SINGLE LINE DIAGRAM

JOB #: 1824
DESIGNERS: TC/HG
DRAWN BY: TC
DATE: 03/13/2019

DRAWING NO.
E-2

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3
5



ELECTRICAL SITE PLAN

SCALE: 1" = 10' - 0"

REFERENCE NOTES

1. PULL BOX, NEMA 3R WITH TAMPER PROOF HARDWARE. PROVIDE TWO, ONE (1) FOR POWER SYSTEMS AND ONE (1) FOR FUTURE DATA.
2. TRENCHING IN THIS AREA SHALL BE PERFORMED WITH CONSIDERATION OF EXISTING UTILITIES. POT HOLE AS REQUIRED. SEE CIVIL ENGINEERING PLANS. FIELD COORDINATE.
3. POWER CONDUCTORS ROUTED IN WIREMOLD RACEWAY. RUN SQUARE AND PLUMB WITH BUILDING CONSTRUCTION IN A NEAT MANNER. ENSURE WIREMOLD IS ROUTED AS CLOSE TO CEILING AS POSSIBLE. FIELD COORDINATE.
4. 2"C. PENETRATION AT EXISTING CONCRETE WALL. PENETRATE WALL IN ACCORDANCE TO STRUCTURAL REQUIREMENTS. TYPICAL.
5. 2"C. PENETRATION AT EXISTING CONCRETE WALL FOR FUTURE COMMUNICATIONS. PENETRATE WALL IN ACCORDANCE TO STRUCTURAL REQUIREMENTS. TYPICAL. SEE PENETRATION DETAILS ON SHEET E-5.
6. 1-1" C.O. FOR FUTURE COMMUNICATIONS PROVISION. TYPICAL.
7. ENSURE STRUCTURE IS PROPERLY GROUNDED AS PER NEC REQUIREMENTS. INSTALL NEW GROUND ROD (3/8"D X 10' LONG). QUANTITY AS MAY BE REQUIRED TO MAINTAIN MINIMUM RESISTANCE PERMITTED PER DIVISION 26 SPECIFICATIONS. EMBED IN CONCRETE FOUNDATION AND CONNECT TO STEEL FRAMING COMPONENTS BY MEANS OF GROUNDING CLIP WHERE APPLICABLE. BOND BRANCH CIRCUIT GROUNDING CONDUCTOR TO BRIGHT METAL STRUCTURE COMPONENTS. REFER TO MANUFACTURER'S WIRING DIAGRAMS. FIELD LOCATE GROUND WELL BOX FLUSH IN CONCRETE, BENEATH BENCH AND OUTSIDE OF STRUCTURE FOOTING.
8. BUS SHELTER STEEL COLUMN, AS OCCURRING.
9. TRANSITION BRANCH CIRCUIT CONDUCTORS THROUGH STRUCTURE COLUMN AS PER MANUFACTURER REQUIREMENTS. MAINTAIN SEPARATION OF COMMUNICATIONS AND POWER CONDUCTORS BY TRANSITIONING THROUGH SEPARATE COLUMNS. PROVIDE NEMA 3R JUNCTION BOX AND BASE OF COLUMN, ABOVE GRADE, AS MAY BE REQUIRED.
10. ALL EXPOSED CONDUIT SHALL BE RIGID METALLIC, ROUTED SQUARE AND PLUMB WITH BUS SHELTER STRUCTURE. PAINTED TO MATCH SHELTER FINISH.
11. PULL BOX, NEMA 1 WITH TAMPER PROOF HARDWARE. PROVIDE TWO (2), ONE (1) FOR POWER SYSTEMS AND ONE (1) FOR FUTURE DATA. INSTALLATION OF PULL BOX ON BUILDING INTERIOR SHALL BE AS HIGH AS PRACTICAL, APPROX. 3" BELOW CEILING. FIELD COORDINATE (TYPICAL).
12. COORDINATE LOCATION OF ELECTRICAL UNDERGROUND WITH IRRIGATION. MAINTAIN 4-FOOT SEPARATION BETWEEN WET AND DRY UTILITIES. WET AND DRY UTILITIES ARE NOT ALLOWED WITHIN A COMMON TRENCH.
13. BUILDING PENETRATIONS SHALL BE APPROVED BY THE STRUCTURAL EOR. CONTRACTOR SHALL X-RAY EXISTING WALL TO CONFIRM PENETRATION LOCATION AND ENSURE PENETRATION WILL NOT CONFLICT WITH EXISTING REBAR.

EQUIPMENT LEGEND

NOTES:
- EQUIPMENT NOTED IS OWNER FURNISHED, CONTRACTOR INSTALLED.
- THE CONTRACTOR TO COORDINATE ONSITE INTERCONNECTION, PROGRAMMING, AND VALIDATION OF EQUIPMENT WITH THE FOLLOWING SUPPLIERS UNDER CONTRACT WITH RTA:
  - CONNEXIONZ (LED SIGNAGE)
  - GFI (TICKET VENDING MACHINES)
- THE CONTRACTOR SHALL INTEGRATE EQUIPMENT SUPPLIERS UNDER CONTRACT WITH RTA INTO THE PROJECT SCHEDULE AS REQUIRED.

(A) BUS SHELTER LED SIGNAGE

POWER: 5.5A, 120V, 660VA
DATA: ETHERNET CAT 5 WITH RJ45 (SHIELDED, 600V) CONNECTOR BY OTHERS.

(B) TICKET VENDING MACHINE

POWER: 30A, 120V
DATA: CONDUIT-ONLY, CELL MODEM CONNECTION BY OTHERS.

(C) BUS CANOPY WITH INTEGRAL LED LIGHTING

POWER: 3.25A, 120V, 390VA
DATA: CONDUIT ONLY

(D) TWO-SIDED KIOSK WITH INTEGRAL LED LIGHTING

POWER: 60W, 120V, 86VA
DATA: NONE

EXISTING ELECTRICAL UTILITIES AND STRUCTURES

- THE LOCATION OF EXISTING ABOVE GRADE AND UNDERGROUND ELECTRICAL FACILITIES WITHIN THE JOBSITE ARE APPROXIMATE AND HAVE BEEN BASED ON LIMITED FIELD OBSERVATIONS, VERBAL DESCRIPTIONS PROVIDED BY THE FACILITY OWNER AND/OR VARIOUS AGENCIES INVOLVED, AS WELL AS AS-BUILT ELECTRICAL RECORDS. NO SUBSURFACE EXPLORATION FOR EXISTING UNDERGROUND ELECTRICAL FACILITIES HAS BEEN CONDUCTED BY GECE FOR THIS WORK. THE FACILITY OWNER AND ENGINEER DO NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, AND IT IS UNDERSTOOD THAT THERE MAY BE ABOVE GROUND OR UNDERGROUND ELECTRICAL / COMMUNICATIONS FACILITIES, OR OTHER UTILITIES, THAT ARE NOT SHOWN ON THE PLANS AND MAY BE ENCOUNTERED DURING THE COURSE OF WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION AND DEPTH OF EXISTING UNDERGROUND ELECTRICAL FACILITIES WHICH MAY AFFECT OR BE EFFECTED BY THE CONTRACTOR'S WORK. POTHOLE ALL ELECTRICAL CONDUITS AS REQUIRED PER CIVIL ENGINEERING SPECIFICATIONS.
- PRIOR TO COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR SHALL POTHOLE THE EXISTING ELECTRICAL CONDUITS TO DETERMINE THE EXISTING HORIZONTAL AND VERTICAL LOCATIONS. POTHOLE RESULTS SHALL BE DELIVERED TO THE ENGINEER OF RECORD FOR EVALUATION. PROVIDE THREE (3) WORKING DAYS TO EVALUATE THIS INFORMATION AT NO COST TO THE OWNER.
- EXISTING UNDERGROUND ELECTRICAL, INCLUDING BUT NOT LIMITED TO ELECTRICAL SERVICE, DISTRIBUTION, TELEPHONE, FIBER OPTIC INTERDUCT, AND CABLE TELEVISION SHALL BE PROTECTED, MAINTAINED, RELOCATED, REROUTED, REMOVED, AND/OR RESTORED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE, WITH THE LEAST POSSIBLE INTERFERENCE WITH THESE SERVICES.
- CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) A MINIMUM OF 2 WORKING DAYS PRIOR TO COMMENCEMENT OF TRENCHING / EXCAVATION WORK AND REQUEST FIELD MARKING OF EXISTING UNDERGROUND UTILITIES.

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PROJECT #1824

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RTA TRANSIT CENTER
ELECTRICAL ROUTING PLAN
ROAD IMPROVEMENTS

JOB #: 1824
DESIGNERS: TC/HG
DRAWN BY: TC
DATE: 03/13/2019

DRAWING NO.
E-3
15 OF 20

Heather – Mar 13, 2019 – 4:35pm

FOR REDUCED PLANS
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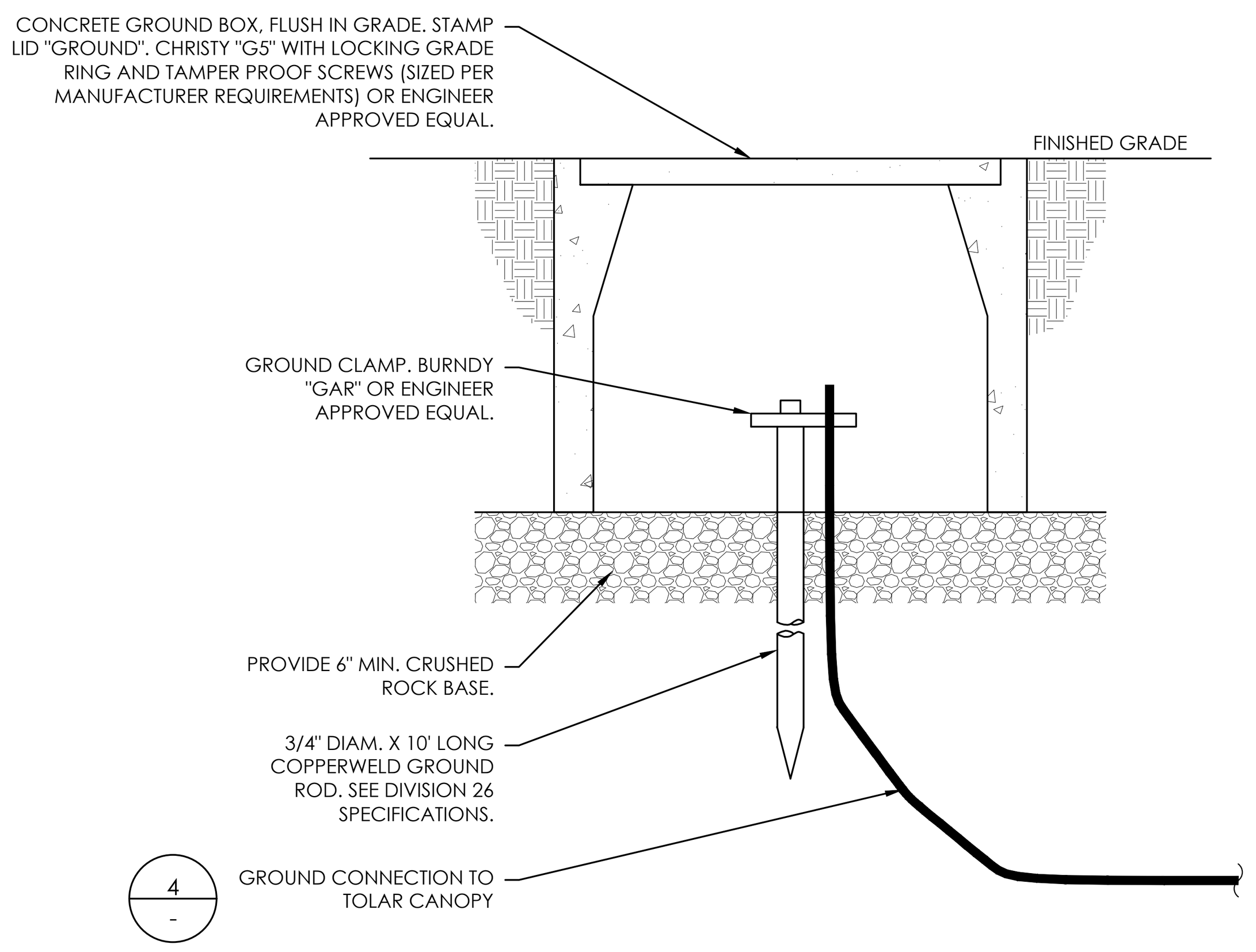
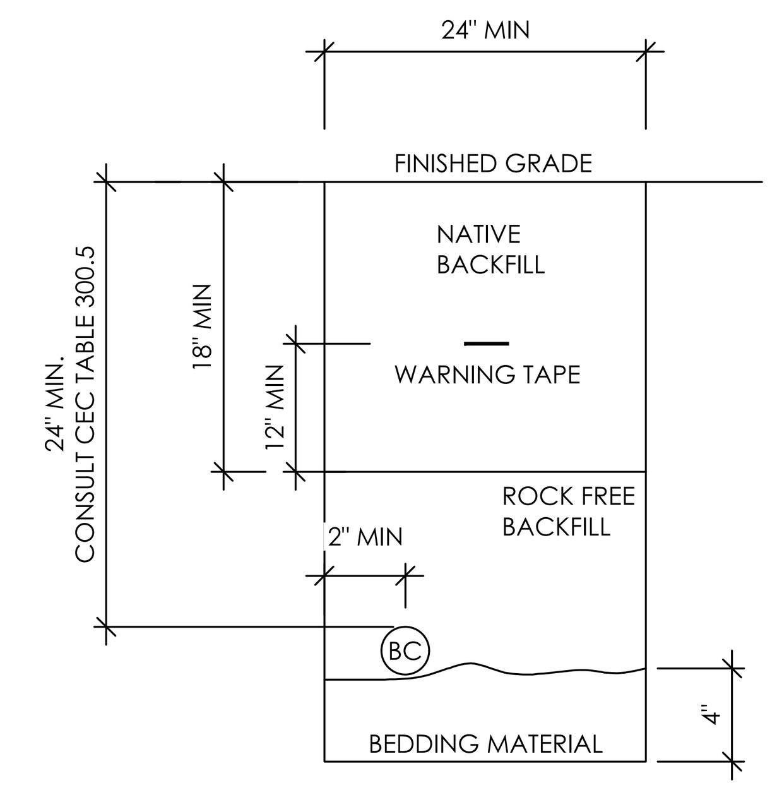


CONCRETE GROUND BOX, FLUSH IN GRADE. STAMP LID "GROUND". CHRISTY "GS" WITH LOCKING GRADE RING AND TAMPER PROOF SCREWS (SIZED PER MANUFACTURER REQUIREMENTS) OR ENGINEER APPROVED EQUAL.
FINISHED GRADE
GROUND CLAMP, BURNDY "GAR" OR ENGINEER APPROVED EQUAL.
PROVIDE 6" MIN. CRUSHED ROCK BASE.
3/4" DIAM. X 10' LONG COPPERWELD GROUND ROD, SEE DIVISION 26 SPECIFICATIONS.
4
GROUND CONNECTION TO TOLAR CANOPY

1 TYPICAL GROUND WELL
NOT TO SCALE



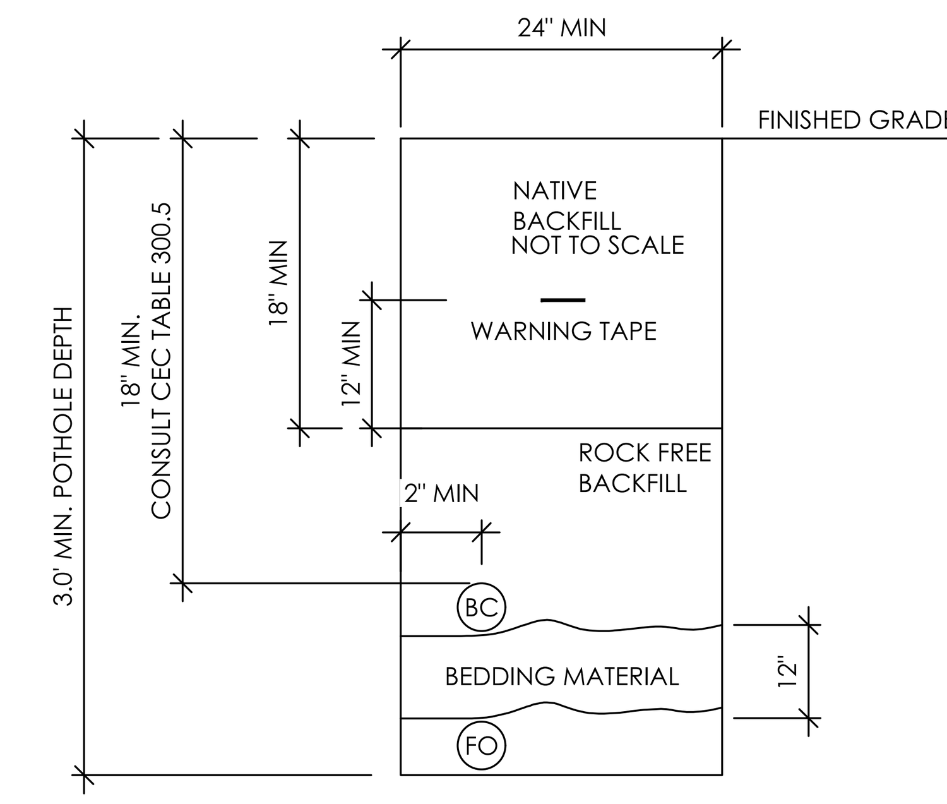
CONDUIT LEGEND

"BC" LINE VOLTAGE BRANCH CIRCUIT (I.E. POWER / CONTROLS)

GENERAL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING UNDERGROUND SERVICE ALERT (USA) PRIOR TO DIGGING/EXCAVATING TO LOCATE EXISTING UTILITIES IN PROXIMITY.
2. CONSULT CEC TABLE 300.5 FOR MINIMUM COVER REQUIREMENTS WHERE INSTALLATION, SPECIFICALLY WHERE CONDUITS IS INSTALLED UNDER STREETS, ROADWAYS, DRIVEWAYS AND PARKING AREAS.

2 TYPICAL BRANCH CIRCUIT TRENCH DETAIL
NOT TO SCALE



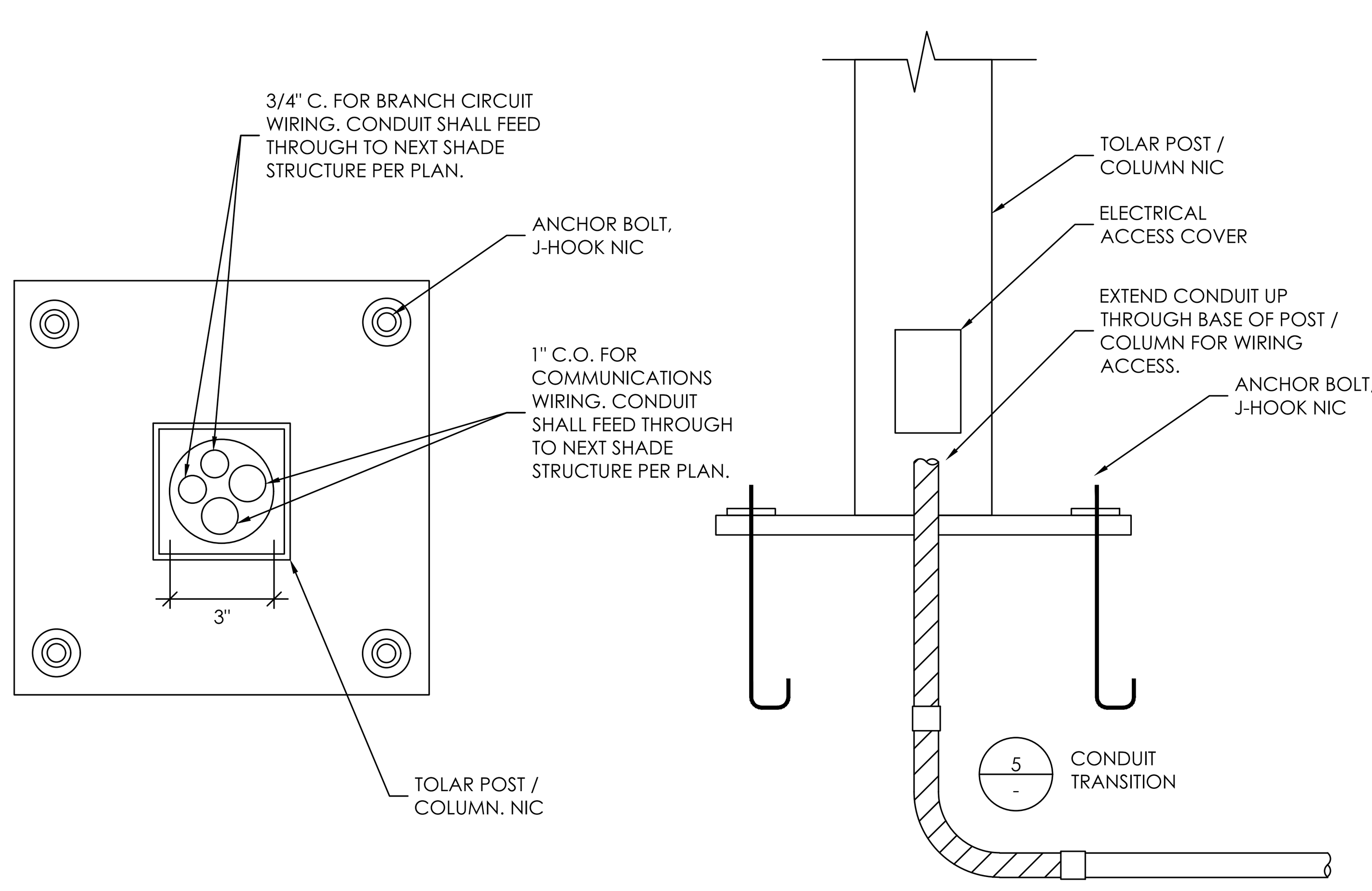
CONDUIT LEGEND

"BC" LINE VOLTAGE BRANCH CIRCUIT (I.E. POWER / CONTROLS)
"FO" FIBER OPTIC INTERDUCT

GENERAL NOTES:

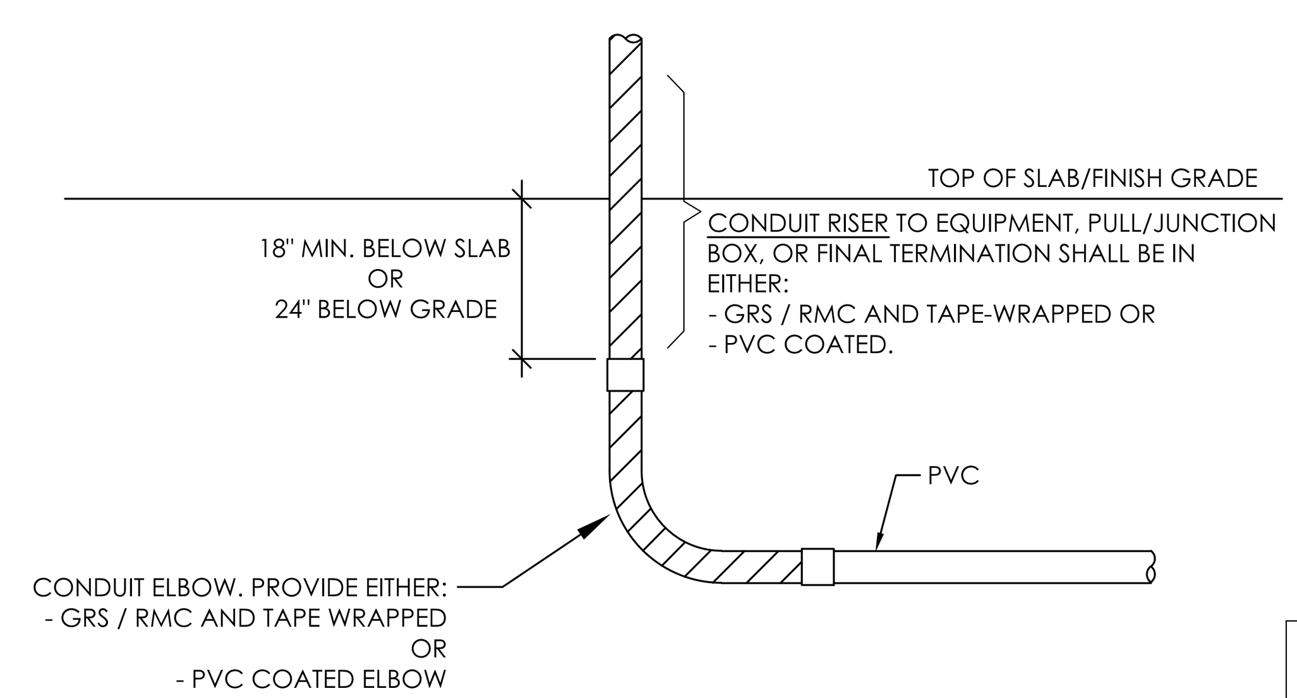
1. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING UNDERGROUND SERVICE ALERT (USA) PRIOR TO DIGGING/EXCAVATING TO LOCATE EXISTING UTILITIES IN PROXIMITY.
2. CONSULT CEC TABLE 300.5 FOR MINIMUM COVER REQUIREMENTS WHERE INSTALLATION, SPECIFICALLY WHERE CONDUITS IS INSTALLED UNDER STREETS, ROADWAYS, DRIVEWAYS AND PARKING AREAS.

3 BRANCH CIRCUIT WITH FIBER OPTICS TRENCH DETAIL
NOT TO SCALE



3/4" C. FOR BRANCH CIRCUIT WIRING. CONDUIT SHALL FEED THROUGH TO NEXT SHADE STRUCTURE PER PLAN.
ANCHOR BOLT, J-HOOK NIC
1" C.O. FOR COMMUNICATIONS WIRING. CONDUIT SHALL FEED THROUGH TO NEXT SHADE STRUCTURE PER PLAN.
3"
TOLAR POST / COLUMN. NIC
TOLAR POST / COLUMN NIC
ELECTRICAL ACCESS COVER
EXTEND CONDUIT UP THROUGH BASE OF POST / COLUMN FOR WIRING ACCESS.
ANCHOR BOLT, J-HOOK NIC
5
CONDUIT TRANSITION
TOP VIEW
SIDE VIEW

6 TYPICAL CONDUIT TRANSITION AT BUS SHELTER COLUMN

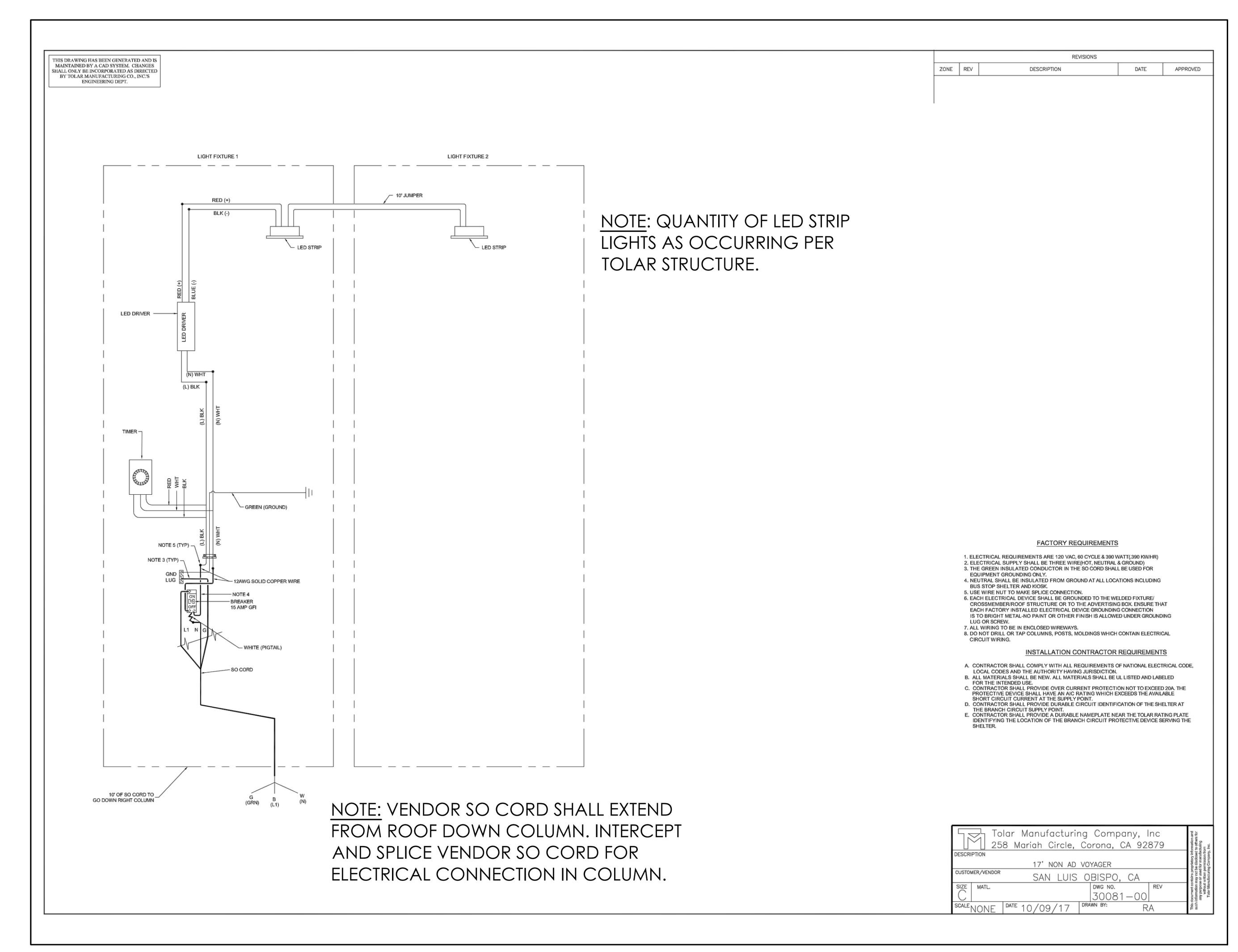


18" MIN. BELOW SLAB OR 24" BELOW GRADE
TOP OF SLAB/FINISH GRADE
CONDUIT RISER TO EQUIPMENT, PULL/JUNCTION BOX, OR FINAL TERMINATION SHALL BE IN EITHER:
- GRS / RMC AND TAPE-WRAPPED OR
- PVC COATED.
PVC
CONDUIT ELBOW, PROVIDE EITHER:
- GRS / RMC AND TAPE WRAPPED
OR
- PVC COATED ELBOW

NOTES:

1. REFER TO TRENCH DETAILS FOR SPECIFICATIONS OF CONDUIT DEPTH.
2. WHEN CONDUIT IS TAPE-WRAPPED IT SHALL BE 1/2" LAPPED TO 3" ABOVE FINISHED GRADE OR TOP OF SLAB.

5 TYPICAL UNDERGROUND CONDUIT TRANSITION TO ABOVE GRADE OR ABOVE SLAB



4 WIRING DIAGRAM FOR TOLAR SYSTEM CONNECTION
NOT TO SCALE
NOTE: CONSULT MANUFACTURER INSTALLATION REQUIREMENTS FOR ADDITIONAL INFORMATION

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RTA TRANSIT CENTER
ELECTRICAL DETAILS

JOB #: 1824
DESIGNERS: TC/HG
DRAWN BY: TC
DATE: 03/13/2019

DRAWING NO.
E-4

Heather — Mar 13, 2019 — 1:10pm

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System No. W-J-8051

WJ 8051

6. Firestop System — The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material*-Fire Blocks — Fire block installed with 5 in. (127 mm) dimension projecting through and centered in opening. Blocks to be firmly packed to fill opening and may or may not be cut flush with both surfaces of wall. In concrete block walls, fire block to fill entire thickness of wall opening unless wall is solid filled.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-BL Firestop Block
   B. Fill, Void or Cavity Material* — Fill material to be forced into interstices of cables, and in any voids/openings between blocks, around penetrants, and between blocks and periphery of opening to the maximum extent possible on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE MAX Intumescent Sealant, CP618 Firestop Putty Stick, CP 660 Firestop Foam or CP 620 Fire Foam
   (Note: L Ratings apply only when FS-ONE Sealant is used.)
   C. Wire Mesh — When the annular space exceeds 12 in. (305 mm) between penetrants and/or to the periphery of the opening, max 2 by 2 in. (51 by 51 mm) wire fencing shall be used to keep the blocks in place. The wire fencing shall be fabricated from min No. 16 SWG (0.060 in. or 1.5 mm) galv steel wire. The wire is cut to fit within max 2 in. (25 mm) of the penetrating item with a min 3 in. (76 mm) lap beyond the periphery of the opening. Wire fencing secured to both surfaces of wall by means of 1/4 in. (6 mm) diam by 1 in. (25 mm) long steel concrete anchors and 1/4 in. (6 mm) by 1-1/2 in. (38 mm) diam fender washers spaced max 8 in. (203 mm) OC. The joints within the wire mesh shall overlap a min of 2 in. (51 mm) and be secured together by means of No. 16 SWG steel wire spaced 8 in. (203 mm) OC.
   C1. Wire Mesh — (Not Shown, Alternate to Item 6C) - When the annular space exceeds 12 in. (305 mm) between penetrants and/or to the periphery of the opening, max 1 in. (25 mm) hexagonal wire fencing shall be used to keep the blocks in place. The wire fencing shall be fabricated from No 20 SWG (0.036 in. or 0.9 mm) or heavier galv steel wire. The wire is cut to fit within max 2 in. (25 mm) of the penetrating item with a min 3 in. (76 mm) lap beyond the periphery of the opening. Wire fencing secured to both surfaces of wall by means of 1/4 in. (6 mm) diam by 1 in. (25 mm) long steel concrete anchors and 1/4 in. (6 mm) by 1-1/2 in. (38 mm) diam fender washers spaced max 8 in. (203 mm) OC. The joints within the wire mesh shall overlap a min of 2 in. (51 mm) and be secured together by means of No. 16 SWG steel wire spaced 8 in. (203 mm) OC.
   D. Firestop Device* - Firestop Collar — (Not Shown) - Firestop collar sized to diam of penetrant shall be wrapped around the outer circumference of the pipe and installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured on both sides of the wall using the anchor hooks provided with the collar. The collars are to be secured together through the opening with ¼ in.(6 mm) diam threaded steel rod and washers and bolts.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643N
   E. Fill, Void or Cavity Material* — Wrap Strip — (Not Shown) - Nom 3/16 in. (4.8 mm) thick by 1-3/4 in. (45 mm) wide intumescent wrap strip. Two layers of wrap strip are continuously wrapped around the pipe and held in place with tape. The wrap strip is to be installed flush with both ends of steel sleeve.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — Hilti CP 648E/1-3/4 Wrap Strip
   F. Steel Sleeve — (Not Shown) - Cylindrical sleeve fabricated from min 30 ga 0.016 in. (0.41 mm) thick galv sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Sleeve to extend 2 in. beyond each surface of wall. The sleeve shall be compressed around the pipe (Item 3) and wrap strip (Item 6E) and secured together with 2 No 8 sheet metal screws on each end of sleeve.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — Hilti CP 648E/1-3/4 Wrap Strip

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

+ Bearing the UL Listing Mark

+++ Bearing the UL Recognized Component Mark

System No. W-J-8051

WJ 8051

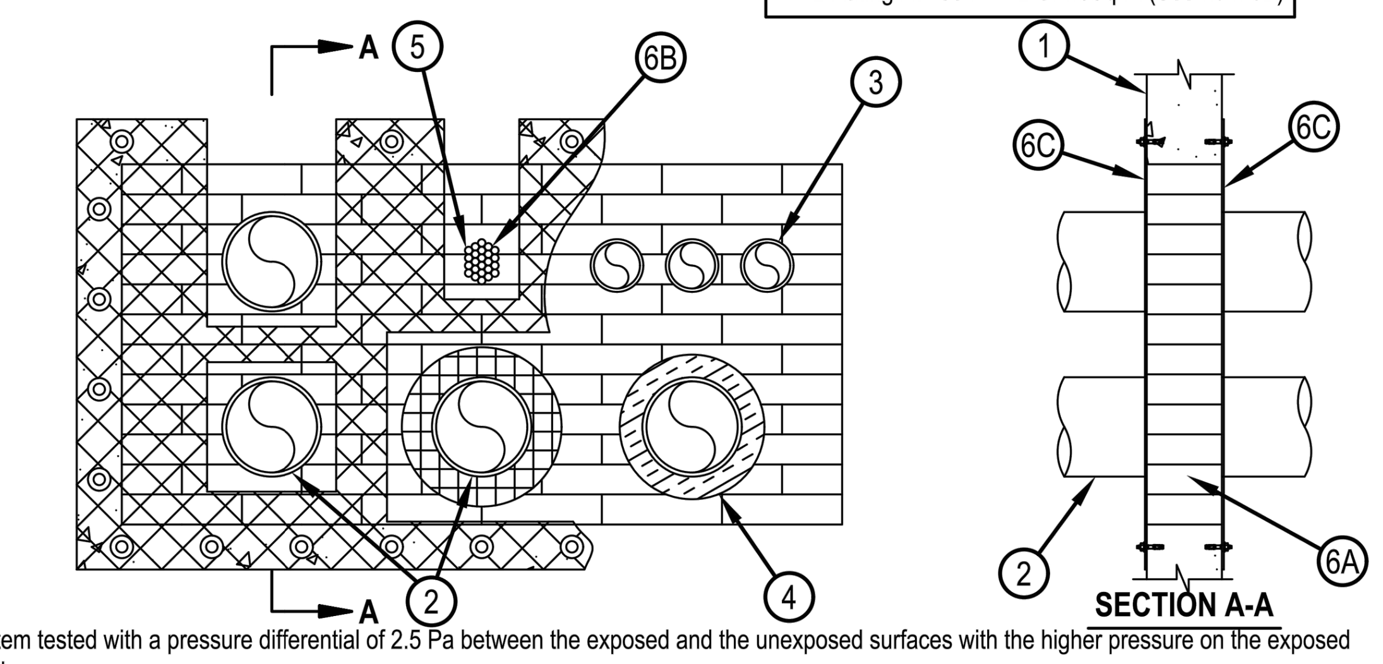
   C. Optical Fiber/Communication Cable Raceways+ — Nom 2 in. (51 mm) diam (or smaller) optical fiber raceway, formed from polyvinyl chloride (PVC). Raceway to be installed in accordance with the National Electrical Code (NFPA No. 70). The annular space between the raceway and the periphery of the opening shall be minimum 2 in. (51 mm) to max 26 in. (660 mm). The minimum space between adjacent penetrants shall be 3-1/2 in. (89 mm).
   See Optical Fiber/Communication Cable Raceways (QAZM) category in the Electrical Construction Materials Directory for names of manufacturers.
   D. Fire Retardant Polypropylene (FRPP) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) piping systems. The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). Must be installed with items 6D or 6E and 6F.
   E. Polyvinyl Chloride (PVC) Pipe — Max 4 in. (102 mm) diam (or smaller) pipe for use in closed (process or supply). The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). Must be installed with item 6D or 6E and 6F.
   F. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Must be installed with items 6D or 6E and 6F.
4. Pipe Insulation — (Optional) - Pipe insulation may be installed on one or more of the metallic pipes or tubes (Items 2A, 2B and 2D). When pipe insulation is used, min space between insulated metallic penetrant and bare metallic pipes, conduits and tubing shall be min 1-1/2 in. (38 mm) and min space to periphery of opening shall be 1 in. (25 mm). The following types of pipe insulations may be used:
   A. Pipe and Equipment Covering Materials* — Max 1-1/2 in. (38 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3 glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
   See Pipe and Equipment Covering Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   B. Pipe and Equipment Covering Materials* — Max 1-1/2 or 2 in. (38 or 51 mm) thick hollow cylindrical calcium silicate, min 10 or 14 pcf (160 or 224 kg/m3 respectively, units sized to the outside diam of the pipe or tube. Pipe insulation secured with stainless steel bands or with min No. 18 SWG stainless steel wire spaced max 6 in. (152 mm) from each face of wall and spaced max 12 in. (305 mm) OC.
   C. Tube Insulation-Plastics+++ — Max 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the foarm of tubing. This pipe insulation may be installed on metallic pipes or tubes (Items 2A, 2B and 2D) not exceeding nom 2 in. (51 mm) diam.
   See Plastics+++ (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
5. Cables — (Optional) — Max eight 3 in. (76 mm) diam (or smaller) tight bundles of cables installed within the opening and rigidly supported on both surfaces of wall. The space between the cables and periphery of the opening shall be min 1-3/16 in. (30 mm) to 26 in. (660 mm). The space between cables bundles and/or other penetrants shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). Any combination of the following types and sizes of cables may be used:
   A. 1/C 750 kcmil (or smaller) power cable with EPR polyvinyl chloride (PVC) insulation and jacket.
   B. 300 pair - No. 24 AWG telephone cable with PVC insulation and jacket.
   C. 24 fiber optic cable with PVC outer and subunit jacket.
   D. 3/C No. 12 AWG copper conductor Metal Clad+ cable with PVC insulation.
   E. 7/C No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
   F. Type R GU/59 coaxial cable with PVC outer jacket.
   G. 4 pair 22 AWG Cat 5 or Cat 6 data cable.

CLASSIFIED C UL US
Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-J-8051

WJ 8051

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating —2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — 5 CFM/Sq Ft (See Item 6B)	FH Rating — 2 Hr
L Rating At 400 F — 2 CFM/Sq Ft (See Item 6B)	FTH Rating — 0 Hr
	L Rating At Ambient — 5 CFM/Sq Ft (See Item 6B)
	L Rating At 400 F — 2 CFM/Sq Ft (See Item 6B)



System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.
1. Wall Assembly — Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Maximum area of opening 1152 in2 (7432 cm2) with maximum dimension of 48 in. (1219 mm).
2. Metallic Penetrants — One or more metal pipes, conduits or tubing may be installed within the through opening. The space between pipes, conduits or tubing shall be min 1 in. (25 mm) to max 26 in. (660 mm). The space between pipes, conduits or tubing and periphery of opening shall be min 0 in. (point contact) to max 26 in. (660 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 6 in. (152 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit, nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing (EMT) or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   D. Copper Pipe or Tube — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.
3. Nonmetallic Penetrants — One or more non-metallic penetrants may be installed within the through opening. Penetrants to be rigidly supported on both sides of wall assembly. The following types and sizes of non-metallic penetrants may be used:
   A. Polyvinyl Chloride (CPVC) Pipe — Max 2 or 4 in. (51 or 102 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply). The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). For penetrants larger than 2 in. items must be installed with Item 6D or 6E and 6F.
   B. Rigid Nonmetallic Conduit (RNC)+ — Nom 2 or 4 in. (51 or 102 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA No. 70). The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). For penetrants larger than 2 in. items must be installed with Items 6D or 6E and 6F.

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REGISTERED PROFESSIONAL ENGINEER
HEATHER ANN GRAY
NO.E18927
ELECTRICAL
STATE OF CALIFORNIA
EXPIRES: 12.31.2019
PROJECT #1824

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RTA TRANSIT CENTER
ELECTRICAL DETAILS

JOB #: 1824
DESIGNERS: TC/HG
DRAWN BY: TC
DATE: 03/13/2019

DRAWING NO.
E-5

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

5. Wire, cable, SE Cable: Southwire, Okonite, or engineer of record approved equal.
6. Splice Kits: 3M, Ideal.

2.2 MATERIALS

A. Copper Wire and Cable. Solid and stranded type - Suitable for operation at 600 volts in all installations as specified in the National Electrical Code. Type XHHW, THHN, or THWN insulation rated for 90 deg. Celsius in wet and dry locations. Stranded or solid for sizes smaller than and including 8 AWG and stranded for larger than size 8 AWG.

B. Connectors, Lugs, and Pads - Connectors shall be UL listed and suitable for 600 volts in all installations and a minimum of 75 deg. Celsius rated. Strict adherence to manufacturer installation means and methods is required. Connections shall be suitable for use with conductors installed (i.e. Copper or Aluminum). Connectors shall be appropriately sized pursuant to the conductors connected (i.e. stranded or solid). Exposed wires, clamps, and connectors shall be completely insulated with vinyl plastic tape. Indenture-compression type connectors shall be used for stranded conductors. Screw-on compression type connectors shall be used for size 8 AWG and smaller.

C. Splice Kits
1. Copper Conductors, sizes #10 AWG and smaller where spliced shall use "spring-lock" connectors. 3M "Scotchlock", Ideal "Wing Nuts", or equivalent.
2. Copper Conductors, sizes #8 and larger where spliced shall utilize an approved split bolt connector. These types of non-insulated connections shall be thoroughly protected with applied insulation. 3M #2200 or #2210 vinyl mastic insulating pads.
3. Spliced conductors in exterior, damp and wet locations shall be insulated with an epoxy kit, or protected with 3M #2200 or #2210 vinyl mastic insulating pads.

PART 3 - EXECUTION

3.1 CONDITIONS

A. Follow manufacturer instructions with respect to installation in low ambient temperatures. Cables installed in cold weather shall be handled with care and pulled slower.

B. Conductors shall have the proper listing for the environment installed (i.e. wet location, plenum ceiling, high/low ambient temperature). Conductors installed exterior, underground, or below floor slab shall require a wet location listing.

3.2 PREPARATION

A. Inspect cable and reels for damage prior to installation. Ensure cable ends are sealed to prevent entrance of moisture.

B. Consult cable manufacturer for approval of proper pulling equipment (i.e. wood reels, steel reels, etc.)

C. Ensure pulling lubricant is approved by the manufacturer and compatible with the cable. Lubricant that is made of flammable product, wax, and/or grease is not approved.

3.3 INSTALLATION

A. Conductors shall be installed in a permanent raceway or cable tray. Raceways shall be as sized to meet minimum code requirements or as noted on the drawings, whichever provides a larger cross-sectional area. Conduit raceway shall be installed prior to pulling conductors through.

B. Conductor bend radii shall not exceed manufacturer recommendations during installation.

C. Do not exceed manufacturer limitations for the amount of pulling tension applied to the conductors. Avoid pulling different conductor sizes, with different tension limitations, at the same time. Pull tension calculations shall be performed prior to pulling conductors to ensure maximum pulling stress allowed by the manufacturer.

D. Do not exceed manufacturer limitations with respect to maximum side wall pressure.

E. Direct burial cable (600V rated) shall be covered by a minimum of 24 inches of cover. Consult electrical drawings for additional trench specifications. Where there is a conflict between the drawings and specifications, the more restrictive requirement shall take prescience.

F. Strain relief fittings shall be used where the installation exceed manufacturer maximum stress allowanced for cables under vertical tension. Vertical raceways shall be supported at the top (or as close as practical), with interval supports per NEC Table 300.19 (A).

G. Dedicated neutral conductors shall be provided for each single phase circuit (i.e. one neutral conductor for each phase conductor) with the exception of multiwire branch circuits where either a common handle tie, two, or three pole circuit breaker is used in accordance with NEC 210.4 (B).

H. Conductors shall be as specified on the drawings. Conductors smaller than 12 AWG shall not be used for commercial projects and 14 AWG for residential projects.

I. Copper Wire and Cable, either solid, compact stranded, or stranded type shall be color coded pursuant to voltage and phase configuration. Phase A - Black (208V, 240V), Brown (480V). Phase B - Red (208V), Orange (240V, 480V), Phase C - Blue (208V, 240V), Yellow (480V). Neutral - White (208V, 240V), Gray (480V). Ground - Green (208V, 240V, 480V). Isolated Ground - Green w/ colored strip (208V, 240V, 480V).

J. SPLICES
1. The contractor shall be responsible to assure that all splices are completed in a secure and permanent fashion, maintaining the integrity of the connection without faults or shorts. Where applicable, and required per installed conditions, the contractor shall take extra care to tape wrap spliced conductors.
2. Splices shall be minimized. Splices below grade shall be avoided, if required, the Engineer of Record will approve prior to installation. Feeder splices below grade shall be made be fully watertight and made with conductors encapsulated in epoxy.

K. CONNECTORS
1. Electrical connections shall be inspected periodically in accordance to NFPA 70B.
2. Where set screw connectors are used, ensure screws are tightened via a torque wrench or torque screw driver. Connectors shall be tightened to the value as required by the connector manufacturer.
3. Where compression connectors are utilized, ensure the crimping tool utilizes is as per manufacturer recommendations.

L. The use of pulling compounds is allowed. Pulling compounds shall be applied before and/or during the pull.

M. Cable shall be installed in a neat and workmanlike manor. Cable shall be installed parallel or perpendicular to walls. Diagonal runs shall not be permitted. Cables routed in cable tray shall be organized and tie wrapped.

N. Cables installed in cabinets and panelboards shall be bundled in a neat and orderly fashion in the wireway. Conductors shall be held clear of sharp edges.

O. Conductors in panels, cabinets, switchgear, motor control cabinets, pull boxes, etc. shall be labeled indicated branch circuit designation and source of supply.

P. Conductors shall be installed in an approved raceway. Each raceway shall also contain a grounding conductor size per NEC table 250.122.

END OF SECTION 26 05 19

SECTION 26 05 26 - GROUNDING AND BONDING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Basic grounding and bonding of electrical systems.

B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification for a complete grounded and bonded system.

1.2 DEFINITIONS

A. Definitions shall be consistent with Article 100 of the National Electrical Code, with California State Amendments.
1. "Bonding Jumper" - A reliable conductor to ensure the required electrical conductivity between metal parts required to be electrically connected.
2. "Bonding Jumper, Equipment" - The connection between two or more portions of the equipment grounding conductor.
3. "Bonding Jumper, Main" - The connection between the grounded circuit conductor and the equipment grounding conductor at the service.
4. "Ground" - The earth.
5. "Grounded" (grounding) - Connected (connecting) to ground or to a conductive body that extends the grounded connection.
6. "Grounded, Solidly" - Connected to ground without inserting any resistive or impedance device.
7. "Grounded Conductor" - A system or circuit conductor that is intentionally grounded.

1.3 RELATED SECTIONS
1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
2. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

A. Related Sections Under Other Divisions:
1. The General provisions, including supplementary conditions, of this contract apply to this section.

1.4 REQUIREMENTS

A. Grounding and bonding of the electrical system shall be performed in accordance to the latest published requirements of the following codes and standards. Note, grounding and bonding of electrical systems shall be specific to electrical equipment and conductive material, establishing an effective ground-fault current path and personal safety.
1. National Electrical Code (NEC), with California State Amendments, Article 250 - Grounding
2. IEEE Standard 81 - Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials for a Grounded System
3. IEEE Standard 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems
4. ASTM B1 - Hard-Drawn Copper Wire
5. ASTM B8 - Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
6. UL 83 - Thermoplastic-Insulated Wires and Cables
7. UL 467 - Grounding and Bonding Equipment
5. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).
6. Prior to final acceptance, the electrical system shall be tested and determined to be free from grounds and short circuits.

D. DELIVERY, STORAGE AND HANDLING
1. Provide for delivery, uploading, transportation and storage of equipment until installation and final acceptance by the owner.
2. Equipment and materials shall be stored in an environment consistent with what the equipment is listed for. Pay special attention and mediate environmental conditions such as, but not limited to: temperature, moisture, water, dust, dirt, etc. Assume liability of storage facilities and equipment and materials stored therein.
3. Electrical equipment shall be free of damage upon installation. Equipment damaged in transport or while in storage on or off the job site will be rejected and shall be replaced free of charge to the owner.
a. The Architect, Engineer, and Owner retain the right of continuous access and inspection of stored materials and equipment.
b. Once installed, equipment (including luminaires) shall be protected from, but not limited to: construction activities, dirt, debris, temperature, moisture, etc. until project completion and final acceptance by the owner.

1.5 GUARANTEES

A. Damaged equipment shall be repaired or replaced as necessary at no cost to the owner prior to final acceptance.

B. Guarantees shall be submitted to the owner, in writing, prior to final acceptance.

C. The installation, including labor, shall be warranted free of defects for a minimum of one year from date of owner final acceptance. Any defect related to the contractor's work, during the warrantee period, shall be corrected at the contractor's expense.

D. Equipment shall be warranted free of defects for a minimum of one year or as stated in this specification, whichever is a longer duration.

Part 2 - PRODUCTS

2.1 MATERIALS

A. Materials, components, and accessories shall be new unless otherwise noted in this specification.

B. Manufacturer discontinued product shall not be acceptable. Materials, equipment, and parts comprising any unit or part thereof, shall be new and unused unless otherwise noted in this specification. Damaged materials, equipment, and parts are not considered to be new and will be rejected per this specification.

Part 3 - EXECUTION

3.1 INSTALLATION

A. Work shall be performed by a skilled worker in a manner reflecting best, modern, construction practices and shall be consistent with acceptable means and methods of the trade and code requirements.

B. Upon completion, work shall have a neat, orderly, and finished appearance. Evidence of debris associated with the work shall be removed from the premise and disposed of legally and appropriately.

C. Clean equipment, both inside and out, upon final installation. If required, retouch equipment finishes in accordance with manufacturer instructions.

D. Maintain a safe working environment, including but not limited to:
a. Conform to all OSHA workplace requirements.
b. Equipment dead front covers shall be in place while equipment is energized.
c. Barriers, trench plates, flags, tape, etc. shall be used to keep persons away from unsafe conditions.
d. Conform with owner imposed safety requirements and site standards.

E. Coordinate raceway systems, equipment, and materials with other trades and building construction, in order to:
a. Avoid unnecessary project delays and conflicts.
b. Ensure penetrations made to exterior walls, foundations, fire rated assemblies, ceilings, and floors are approved and made per structural requirements and details.
c. Ensure ceiling systems, i.e. luminaires and ceiling mounted devices, do not conflict with, or limit fire sprinkler coverage.
d. Schedule, sequence, move, and position large equipment into the building during construction.
e. Coordinate sequence of work installed with other trades. Every effort shall be made to avoid unnecessary modification to work that has already been performed by other trades. Arrange for chases, slots, and openings in building components where needed during the progress of construction to allow for electrical installations.

F. Install electrical equipment to facilitate future servicing, maintenance, repair, and replacement (either complete assembly or individual components). As much as practical, connect equipment for ease of disconnecting at a later date, with minimal interference with other installations.

G. Equipment Support and Installation
a. Electrical equipment shall be anchored to building floors, foundations, concrete housekeeping pads, concrete bases where appropriate by bolts and anchor bolts with studs.
b. After installation and before energizing electrical equipment, torque each bolted bus and cable connection in accordance to manufacturer recommendations. Calibrated torque wrenches shall be used.
c. Screw type conductor fasteners and other permanent (i.e. epoxy conductor adhesive) shall be used in junction boxes, pull boxes, terminal cabinets, panels, switchboards, switchgear, motor control centers, variable frequency dries, or other types of enclosures containing electrical devices and/or conductors. Glue-on type conductor fasteners shall not be allowed.
d. Support channels shall be installed as required for the support of raceways, cable trays, devices, enclosures, and other electrical equipment.
e. Iron and steel supports shall be separated from aluminum with a minimum ¼" neoprene or other non-metallic gasket.
f. When working with galvanized steel product (i.e. channel, conduit, equipment), paint any field cuts and or scratches with a cold galvanizing spray paint. Ensure manufacturer requirements are met.
g. Seismic bracing shall be provided as required per the Uniform Building Code.
h. Electrical equipment, materials, and/or luminaires shall be securely supported and mounted independently from building structure to ensure sagging or swaying. Other trade work (for example, mechanical ducting) shall not be used as a support means for electrical.
i. Support devices shall be sized appropriate to withstand four times the weight of equipment it supports. Bracing shall comply with structural engineering requirements and seismic design category "SDC" as defined by others for the project.

END OF SECTION 26 0500

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Basic wire and cable for feeder and branch circuit conductors.

B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.

C. Principal features of this section include, but are not limited to the following:
1. Wire and cable
a. Solid and stranded type
2. Connectors, Lugs, and Pads
3. Splice Kits

1.2 RELATED SECTIONS
1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
2. Section 26 05 33 RACEWAYS & BOXES FOR ELECTRICAL SYSTEMS
3. Section 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEM
4. Related Sections Under Other Divisions:
a. The General provisions, including supplementary conditions, of this contract apply to this section.
b. Control, Signal, and Communications conductors shall be as required per the manufacturer of the equipment or as specified by others.

1.3 REQUIREMENTS

A. Materials and installation shall be in accordance with the latest published requirements of the following codes and standards:
1. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).
2. IEEE Standard 510 - 1992, Recommended Practices for Safety in High Voltage and High Voltage Power Testing.
3. IEEE Standard 400 - 2001, Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems.
4. National Electrical Code, NFPA 70.
5. National Fire Protection Code 70B, Recommended Practice for Electrical Equipment Maintenance.
6. Federal Specification A-A-59544.
7. UL 83 - Thermoplastic-Insulated Wires and Cables
8. ASTM B1 - Hard-Drawn Copper Wire
9. UL 486 A and UL 486 B - Wire Connections for Copper and Aluminum
10. NECA/AA-104-2012 - National Electrical Contractors Association Recommendation for Installing Aluminum Building Wire and Cable

Section 26 0500 - Common Work Results For Electrical

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Basic electrical materials and methods.

B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
1. Principal features of this installation include:
a. Raceways, boxes, gutters, enclosures, power wire, cable, and conductors.
b. Distribution equipment, including panelboards, and metering equipment.
c. Circuit breakers.
d. Grounding
e. Transit Center Equipment connections.
f. Underground system installation.
g. Owner training of metering equipment.

1.2 RELATED SECTIONS

A. Related Sections Under Other Divisions:
1. The drawings and general provisions, including supplementary conditions, of this contract apply to this section.
2. Grading, patching, and repairing of existing surfaces, including but not limited to: asphalt, concrete, and vegetation, as required by the Civil Engineer.
3. Painting of exposed electrical equipment/raceways as required by the City of San Luis Obispo / Civil Engineer.
4. Concrete work including but not limited to: building penetrations as required by the Civil/Structural Engineer.

1.3 SYSTEM DESCRIPTION

A. Notify the Engineer of discrepancies within the drawings, this specification, and/or actual field conditions.

B. Install equipment at locations indicated on the drawings as closely as field conditions permit. Obtain acceptance of equipment dimensions prior to installation through submittal review. California Electrical Code (CEC) minimum working clearances shall be maintained.

C. Electrical drawings are diagrammatic in nature and do not reflect minor variations in equipment alignment/installation that may be necessary. Review existing field conditions and make proper adjustments as required to avoid conflict with other trades or portions of work, satisfy the design requirements, and meet code minimums. Obtain acceptance of adjustments from the Engineer.

D. Permits shall be obtained for electrical work. Arrange inspections with the authority having jurisdiction and obtain acceptance.

E. Two copies of an Operating and Installation Manual shall be provided to the owner prior to final acceptance. Manuals shall reflect the installed system and include the following:
1. Submittal documentation reflecting installed materials, equipment, and systems.
2. Testing Reports
3. Certificate of product and installation warranties

F. Owner training shall be prearranged prior to final acceptance. Instruct owner on the operation of metering equipment. Provide manufacturer support as indicated per this specification.

1.4 REQUIREMENTS

A. PERFORMANCE
1. Final equipment feeder or branch circuit connections shall be coordinated with manufacturer nameplate data and specifications.

B. SUBMITTALS AND SHOP DRAWINGS
1. Shop drawings and product data (including manufacturer specification sheets) shall be submitted demonstrating compliance with the construction documents. Obtain approval from the Engineer prior to procurement.
a. Electronic submittal packages will be accepted.
b. Submittals shall be complete. Partial submittals will not be accepted.
c. Identification shall be made on submittal documentation indicating compliance with contract documents and intended use. Highlighted text, notation, etc. are acceptable.
d. The Engineer will review two rounds of product submittals. Should subsequent review be required beyond this to obtain acceptance, the contractor shall be responsible to compensate the engineering for time spent a at the engineer's standard hourly billing rate.
e. Equipment, materials, and components identified in the construction documents with specific manufacturer product numbers limit their use only as to the design, workmanship, and quality, not manufacturer unless otherwise noted specifically. Alternate products will be reviewed and evaluated during the submittal review process, pursuant to conformance with the contract documents. The project team reserves the right to request product samples for evaluation at no cost. The final decision will be made by the Architect. In the event that an alternate product is accepted, the following will be required:
1. Coordination with other trades. Costs incurred as a result of the substitution will be the responsibility of the Contractor.
2. Dimensions shall be field verified to ensure product will fit and maintain code required working clearances.
3. Approval of a substituted product does not alleviate the contractor from providing a complete, working installation compliant with the contract documents, design intent, applicable codes, standards, and local ordinances.
2. Submittals shall include the following:
a. Manufacturer equipment specifications, including but not limited to the following: Metering Equipment, panel boards, load centers, circuit breakers.
1. Grounding.
2. Conduit raceway, innerduct, fittings, and straps.
3. Conductors and terminations.
4. Junction boxes, pull boxes, gutters, and vaults.
5. Electrical devices including, receptacles, switches and accessories.
6. Penetration materials and manufacturer installation details.
7. Finish samples and color charts.
3. Coordination with other trades to the fullest of ability is required to result in a complete, functioning, and professional installation.
4. The construction documents are based on the most accurate information available when prepared. Minor adjustments are frequently made due to changes with respect to architectural plans, construction, and equipment furnished by others. This shall be recognized when bidding and during construction. No change in contract price will be allowed for alternate work which requires approximately the same work to adjust/relocate as a result of construction coordination work. Adequate contingency in the bid price shall allow for such coordination and adjustments.
5. Record drawings shall be provided to the owner prior to final acceptance. Record drawings shall be maintained throughout construction and reflect and illustrate job changes as they occur. Record drawings shall:
a. Be submitted to the owner as a set of reproducible drawings. Hand drafted notation is acceptable, provided it is legible and clear unless otherwise noted per Architectural specifications.
b. Identify locations of concealed and underground conduit 1" size and larger scaled within 12" of actual field conditions.
c. Identify type of luminaire product installed.
d. Identify the location of vaults and boxes.

C. QUALITY ASSURANCE
1. Manufacturers shall be regularly engaged in the manufacture of electrical construction products of types required for this project, whose products have been of satisfactory use in similar service for not less than five years.
2. Installers shall have experience in the installation of products required for this project. Installers shall be experienced with proper installation techniques and manufacturer recommendations. In the acceptance or rejection of the finished installation, no allowance will be made for the lack of skill on behalf of the personnel.
3. Installers shall be qualified by the State of California and provide documentation to the owner of the following:
a. Valid Contractors License.
b. Valid Business License.
c. Individuals employed as electricians on the project shall have a valid journeyman electrician pocket card or California State Division of Apprenticeship Standards General Journeyman Electrician Certificate.
4. Electrical work shall be performed in accordance of the latest published requirements of the following codes and standards:
a. American National Standards Institute (ANSI)
b. American Society for Testing Materials (ASTM)
c. Institute of Electrical and Electronic Engineers (IEEE)
d. National Electrical Contractors Association (NECA)
e. National Electrical Safety Code (NESC)
f. National Electrical Manufacturers Association (NEMA)
g. California Building Code (CBC)
h. National Electrical Code (NEC) with California State Adoptions and Amendments.
i. National Fire Prevention Association (NFPA).
j. California Code of Regulations, Title 8, Section 290.1 (CAL OSHA).

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REGISTERED PROFESSIONAL ENGINEER HEATHER ANN GRAY NO.E18927 ELECTRICAL STATE OF CALIFORNIA

EXPIRES: 12.31.2019
PROJECT #1824

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RTA TRANSIT CENTER
ELECTRICAL DISTRIBUTION

JOB #: 1824
DESIGNERS: TC/HG
DRAWN BY: TC
DATE: 03/13/2019

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E-6
18 OF 20

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3.3 RACEWAYS

A. Rigid Non-Metallic Conduit - Rigid Polyvinyl Chloride (PVC) schedule 40 and/or 80. Utilize below grade, in/under slab or foundation, not where subject to physical damage or at operating temperatures outside of product listing. Cut ends shall be trimmed inside and outside to remove rough edges.

B. Galvanized Rigid Steel (GRS) Conduit - Utilize where exposed between +18" below grade and +8' above finished grade where exposed to physical damage. Cut ends shall be reamed or otherwise finished to remove rough edges. Tape wrap where located below grade.

C. Electrical Metallic Tubing (EMT) - Utilize exposed or concealed, where not subject to physical damage, underground, and in/under slab. Couplings and connectors used with shall be made up tight and of die cast, insulated/non-insulated, set screw type. Stainless steel fittings shall be used in high corrosive areas. Compression type, weatherproof fittings shall be used in damp and wet locations.

3.4 Conduit Supports - Provide a conduit supports system consisting of; clamps, straps, brackets, clips, j-hooks trapeze hangers, "C" channel strut etc. The use of J-hook style supports shall be restricted to not exceeding 1" conduit and wood frame construction. Ensure support is provided with isolation material or cushion as required for shock absorption, sound and vibration isolation, protection from corrosion and abrasion, and allowance for expansion and contraction. Conduit supports shall be selected for use given the conduit size and weight. Follow manufacturer recommendations for pipe spacing when supported, bolt torque. Conduit supports are subject to the approval of the AHJ. Corrections required to obtain approval shall be the sole responsibility of the contractor.

3.5 Conduit Fittings - Fittings shall be appropriate for use with the conduit system installed. Fittings shall consist of connectors, rigid and flexible, adaptors, bushings, liquid tight (as required), locknuts, etc. Connection devices and or fittings that depend solely on solder shall not be used for grounding and bonding. Protect fittings from physical damage. Fittings shall be tight using suitable tools. Fittings shall be insulated when used with raceways that contain 4 AWG or larger conductors per NEC 300.4.

3.6 BOXES

A. Junction boxes, pull boxes, and conduit bodies shall be sized a minimum per NEC Article 314. Adhere to volume and fill calculations as identified in the code.

B. Metallic boxes shall be bonded and grounded in accordance to NEC Article 250.

C. Listed weatherproof boxes, conduit bodies, and fittings are required for use in damp and wet locations.

D. Terminal blocks shall be installed in junction/terminal boxes as required.

E. Weatherproof outlet boxes and covers shall be die-cast metal, powder-coated silver finish, corrosion resistant, provided with threaded conduit ends, and NEMA 3R rating.

F. Outlet boxes for receptacles installed outdoors in a damp and/or wet locations shall have an enclosure for the receptacle that is weatherproof when the receptacle is in use (i.e. "While-in-use" over). "While-in-use" covers shall be metallic and the appropriate gang construction (i.e. Single, double) as required for the device indicated on the drawings.

3.7 ACCESSORIES

A. Provide outlet box mounting brackets, hangars, extension, plaster rings, studs, clamps, and straps as required.

END OF SECTION 26 05 33

SECTION 26 05 46.13 - UNDERGROUND ELECTRICAL CONSTRUCTION AND SERVICE

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Complete underground electrical raceway system.

B. Furnish labor, materials, equipment, components, and necessary services to support design requirements as show on the drawings and specified herein in this specification.
   1. Principal features of acceptance include:
      a. Trenching
      b. Pull boxes
      c. Conduit
      d. Ducts

1.2 RELATED SECTIONS
   1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
   2. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
   3. Section 26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
   4. Section 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
   5. Section 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

A. Related Sections Under Other Divisions:
   1. The General provisions, including supplementary conditions, of this contract apply to this section.
   2. Grading, patching/repair of existing surfaces (asphalt, concrete, vegetation, etc.).
   3. Concrete work including but not limited to: equipment pads, luminaire bases, as required by the Civil / Structural Engineer.

1.3 QUALITY ASSURANCE

A. Electrical work shall be performed in accordance of the latest published requirements of the following codes and standards:
   1. National Electrical Code (NEC) with California State Adoptions and Amendments.

PART 2 - EXECUTION

2.1 CONDUIT

A. Direct buried cable shall not be allowed.

B. Conduit installed underground shall maintain minimum cover requirements as defined in the NEC / CEC Table 300.5, "Minimum Cover Requirements, 0 to 600Volts, Nominal". Consistent with the NEC / CEC cover shall be defined as the shortest distance measured between a point on the top surface of any direct buried conduit or other raceway and the top surface of finished grade, concrete, asphalt, or other surface. Lower cover shall only be allowed where specified with concrete encasement.

C. Where subject to physical damage conduit shall be rigid metal conduit or schedule 80 PVC.

2.2 TRENCHING

A. Backfill material shall not contain large rocks, paving material, cinders, large sharp angular materials / substances, or corrosive materials and like.

B. Actual trench depth shall be adequate to maintain required cover as indicated per NEC / CEC Table 300.5, "Minimum Cover Requirements, 0 to 600Volts, Nominal".

C. Electric and / or communication conduit systems shall not share a common trench with wet utility systems (i.e. water, sewer, sanitary drains, propane, storm drain, or the like). Adequate separation clearance shall be maintained between wet and dry conduit systems defined by the civil engineer. Warning ribbon or tape shall be installed in conduit trenches as identified on the drawings.

D. Warning ribbon or tape shall be installed in trenches at not more than 12" above the underground installation, for direct buried conduit installed 18" below grade.

E. Conform to inspection requirements set forth by the AHJ and / or Utility Company. If applicable, ensure trenches are inspected prior to backfill.

F. Coordinate trench routing with actual field conditions. Every effort shall be made to reduce / eliminate the need for sharp turns / bends.

2.3 PULL BOXES

A. Pull boxes shall be adequately protected / suitable for the environment in which they are installed. For example, traffic rated covers / acceptable installation practice as defined per the manufacturer shall be utilized where pull boxes are installed in a location subject to vehicular traffic (non-incidental).

B. Excavate approximately 6" deeper than the overall height and 4-6" wider (all four sides) that the pull box enclosure. Pull boxes shall be installed on a 3-6" bed of compacted material (i.e. sand or gravel is acceptable). The compacted material shall be level such that the pull box is installed flush with the adjacent finished grade.

C. In the event a pull box is installed in concrete / pavement where subject to occasional, non-deliberate vehicular traffic, an 8" wide section of concrete shall be installed on all four sides of the pull box, extending from grade to 8" below grade.

END OF SECTION 26 05 46.13

1.2 RELATED SECTIONS
   1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
   2. Section 26 05 46.13 UNDERGROUND ELECTRICAL CONSTRUCTION AND SERVICE
   3. Section 26 05 53 IDENTIFICATION OF ELECTRICAL SYSTEMS
   4. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
   5. Related Sections Under Other Divisions:
      a. The General provisions, including supplementary conditions, of this contract apply to this section.
      b. Painting of exposed raceways and/or boxes as required by the Civil Engineer.
      c. Grading, patching, and repairing of existing surfaces, including but not limited to: asphalt, concrete, and vegetation, as required by the Civil Engineer.

1.3 REQUIREMENTS

A. Materials and installation shall be in accordance with the latest published requirements of the following codes and standards:
   1. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).
   2. National Electrical Code (NEC) with California State and local amendments.
   3. UL 1 - Flexible Metal Conduit
   4. UL 5A - Nonmetallic Surface Raceway and Fittings
   5. UL 6 - Electrical Rigid Metal Conduit - Steel
   6. UL 6A - Electrical Rigid Metal Conduit - Aluminum, Stainless Steel
   7. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.
   8. UL 360 - Liquid Tight Flexible Steel Conduit
   9. UL 514A - Metallic Outlet Boxes
   10. UL 514B - Conduit, Tubing, and Cable Fittings
   11. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
   12. UL 651 - Schedule 40, 80, Type EB, and A Rigid PVC Conduit and Fittings
   13. UL 651A - Schedule 40 and 80 High Density Polyethylene (HDPE) Conduit
   14. UL 797 - Electrical Metallic Tubing - Steel
   15. UL 797A - Electrical Metallic Tubing - Aluminum
   16. UL 886 - Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations
   17. UL 1660 - Liquid-Tight Flexible Non-metallic Conduit
   18. UL 1653 - Electrical Non-Metallic Tubing
   19. UL 2225 - Standard for Cables and Cable-Fittings for Use in Hazardous (Classified) Locations
   20. American National Standards Institute (ANSI) OS1 and OS2
   21. National Electrical Manufacturers Association (NEMA) FB1 and 250

PART 2 - PRODUCTS

2.1 MATERIALS

A. Raceways
   1. Raceway product shall be rated for use with 90 degree Celsius power wiring conductors.
   2. Rigid Non-Metallic Conduit
      a. Schedule 40, wall thickness of 0.113 inches, Polyvinyl Chloride (PVC) construction, Bell end feature, manufactured in accordance with NEMA standard TC-2 (conduit) and TC-3 (fittings).
   3. Galvanized Rigid Steel (GRS) Conduit - Hot-dip galvanized, zinc coated rigid steel conduit, manufactured in accordance with ANSI C80.1.
   4. Conduit Supports - Unistrut, Caddy or engineer approved equal. Conduit supports shall consist of; clamps, straps, brackets, clips, j-hooks trapeze hangers, "C" channel strut etc.
   5. Nonmetallic, power-rated, raceway - Legrand "Wiremold" or engineer approved equal.
   6. Conduit Fittings - Thomas & Betts, O-Z Gedney, or engineer approved equal. Fittings shall be appropriate for use with the conduit system installed. Fittings shall consist of connectors, rigid and flexible, adaptors, bushings, liquid tight (as required), locknuts, etc.

B. Boxes
   1. Manufacturers
      a. Outlet Boxes - Bowers, Steel City, Raco, or engineer approved equal.
      b. Weatherproof outlet boxes - Bell, Red Dot, or engineer approved equal.
      c. Weatherproof outlet box "While-in-use" locking cover - Red Dot "CK" series or engineer approved equal.
      d. Pull boxes, Junction Boxes, and Gutters - Hoffman, Circle AW, or engineer approved equal.

PART 3 - EXECUTION

3.1 General

A. Raceway systems shall be installed in accordance to uses permitted per code.

B. Raceways and boxes penetrating a listed fire rated assembles (i.e. walls, floors, and ceilings) shall be installed with use of an UL approved classified through-penetration fire stop systems. Fire Stop System installation must meet requirements of ASTM E 814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.

C. Trenching and backfilling for underground raceway systems is the responsibility of the contractor. Refer to trench requirements detailed on the drawings and Section 26 05 46.13 UNDERGROUND ELECTRICAL CONSTRUCION AND SERVICE requirements. The contractor is required to implement traffic control and provide barriers as required to protect excavated areas.

D. Seismic Support shall consist of approved channel (either in combination or pierced), heavy/standard duty concrete inserts, hangers, nuts, hardware, general support fittings (i.e. Angle supports, beam clamps, pivot fittings, retrofit fittings, brace-anchor fittings, and hinge fittings). Electrical equipment shall be anchored and braced to meet the horizontal and vertical forces identified in the California Building Code.

3.2 CONDUIT SYSTEM

A. Minimum conduit size shall be ½", with the following exceptions:
   1. When a larger size is required to meet Code or as identified on the drawings.
   2. Underground and/or under slab conduit shall be a minimum ¾" or as identified on the drawings.

B. Systems (i.e. power, control, communications, etc.) shall be installed in dedicated raceways. Systems shall not be combined within a raceway unless specifically identified in the construction documents.

C. Install conduit runs in accordance to the schematic representation as indicated on the drawings and as specified. Modify conduit runs to suite field conditions as accepted by the engineer of record.

D. Install conduit runs for branch circuits and or feeders where only circuit numbers are identified on the plans, without schematic conduit routing shown.

E. Install conduit runs in straight lines, parallel to planes of walls and/or ceilings, with uniform and symmetric elbows, offsets, and bends. Conduit shall not be run diagonally.

F. Be conscious of the elevation by which underground conduits are installed. The open conduit end at the building and/or where it transitions into distribution equipment shall be at a higher elevation such to prevent the infiltration of water through the conduit raceway.

G. Conduit shall be installed such that it does not interfere or block equipment, ingress/egress, or access hatches.

H. Conduit shall be securely fastened by means of clamps and/or straps as required per the NEC. Type 316 stainless steel straps and/or clamps shall be used with exposed PVC-coated rigid steel conduit. Provide appropriate conduit hangars, supports, fasteners, and seismic restraints.

I. Conduit bends shall be made such that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Form or field bend conduit with appropriate tools. Conduit shall be routed such that it does not exceed a cumulative angular sum of 300 degrees in bends between junction boxes, pull boxes, conduit bodies, handholes, and vaults

J. When re-using existing raceway(s) and/or installing new raceways, verify raceway(s) are free of internal debris and are not crushed or creased prior to installing conductors or cables. The use of a mandrel may be required. The contractor shall replace conduit sections that are determined to be damaged and/or obstructed.

K. Conduit seals shall be installed as indicated on the drawings and in the following applications:
   1. Exterior conduit upon installation of cables and/or conductors. Utilize pliable duct seal or waterproof expanding foam as necessary.

L. Spare and empty conduits shall be properly plugged with the appropriate cap and/or insert. The use of tape, "duct" tape or like, will not be acceptable. Spare conduit identified on the drawings shall be retained as spare and shall not be used during construction unless prior authorization is given from the engineer of record.

M. Special attention shall be paid to atmospheric conditions (i.e. Corrosion, sunlight, chemicals, abrasion, moisture) and occupancies pursuant to the NEC. Raceway systems shall be suitable for the environment in which they are installed.

N. Use of dissimilar metals shall not be allowed. Boxes, fittings, enclosures, and conduit supports shall be of the same metal, with or without coatings, as the conduit type.

O. Galvanized Rigid Steel (GRS) risers shall be used where conduit runs are installed equal or in excess of 150 LF. GRS elbows shall be used where the top of the elbow is installed less than 18 in. below finished grade, with conduit rising up from below grade to terminate at an equipment enclosure, disconnect switch, device, machinery, etc. above grade. GRS risers and elbows shall either be PVC coated, as identified in this specification, or tape wrapped to a minimum of 3" above finished grade or the top of the equipment pad or slab, whichever is applicable to the installation condition.

1.5 GUARANTEES

A. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).

PART 2 - MATERIALS

2.1 MATERIALS

A. Ground Rods - Copper-covered steel, minimum ¾" diameter x 10' long.

B. Grounding Conductor - Insulated green stranded (No. 8 AWG and larger) and solid (No. 10 AWG and smaller) copper. Insulated green with yellow stripe is acceptable pursuant to NEC.

C. Bonding Conductors - Shall be bare stranded copper, with the exception of solid bare copper for No. 10 AWG and smaller sizes as required per NEC.

D. Connectors, Clamps, Splices, Termination Components, & Mechanical Lugs - Industry standard type for connection grounds, bonding, splicing, tapping and similar. Shall be appropriate for the conductor size as permitted by the manufacturer.

E. Ground Bars - 10" L x ¼" thick copper ground bar with wall mounting kit. Ground bar shall include tapped holes for grounding conductor connections. Extend a #6 AWG copper ground wire from the main electrical service to the ground bar. Attach the ground wire to the ground bar via a cad weld connection.

PART 3 - EXECUTION

3.1 GENERAL CONDITIONS

A. Grounding shall be performed in accordance to the National Electric Code Article 250 requirements.

B. Drive ground rods and install grounding conductors prior to construction of concrete slabs, structural equipment pads, and general equipment housekeeping pads.

C. Grounding conductors shall be sized per the drawings. When a ground conductor size is not identified, the size shall be installed to meet minimum NEC requirements. Refer to NEC Table 250.66 for grounding electrode conductors and NEC Table 250.122 for equipment grounding conductors for grounding raceway and equipment.

D. Equipment grounding conductors, grounding electrode conductors, and bonding jumpers shall be connected by one or more of the following means as outlined in CEC 250.8: Listed pressure connectors, terminal bars, exothermic welding process, machine screw type fasteners, thread -forming machine screws, and connections part of a listed assembly. Connections made solely of solder shall not be permitted.

E. Where ground clamps and fittings are subject to physical damage, maintain protective covering by means of metal, wood, or equivalent. Coordinate in field.

F. Contact surfaces shall be thoroughly cleaned of nonconductive coatings (i.e. paint, lacquer, and enamel) before connections are made to insure good metal contact.

G. Grounding conductors shall be installed in every raceway, both metallic and non-metallic, unless specifically identified on the drawings or permitted per this specification.

H. Inaccessible Grounding Connections: Ground connections that are/will be inaccessible upon completion of construction shall be made via exothermic welds or clamp suitable for direct bury.

I. Ground Connections Requiring Periodic Testing, Not Subject to Physical Damage: Where periodic testing is required for ground connections, the grounding electrode, where the ground conductor connection is made, shall be exposed and stubbed up above grade (approx.. 3-4"), in an area not subject to physical damage.

J. Ground Connections Requiring Periodic Testing, Subject to Physical Damage: Where periodic testing is required for ground connections, the grounding electrode, where the ground conductor connection is made, shall be exposed (approx.. 3-4"), integral to a flush in grade pull box.

K. Obtain inspector of record acceptance as required and prior to below grade and/or inaccessible connections are completed and concealed.

L. Where occurring, above ground gas piping shall be electrically continuous and bonded to an effective ground fault current path. Piping shall be considered to be bonded where it is connected to appliances that are connected to the appliance grounding conductor.

3.2 INSTALLATION

A. Ground Rods: Shall be driven into the earth. The quantity of rods shall be determined per ground resistance testing. Adequate ground rods shall be provided to maintain a minimum ground resistance defined per Section 3.3 TESTING. Where auxiliary ground rods are required, the installed shall be in accordance to NEC 250.54. Electrodes shall be installed within, and not less than, 6 feet spacing between. Ground rods shall be bonded together, and considered a single grounding electrode system. Bonding connections shall be made by either clamps, suitable for direct burial, via an exothermic weld. The ground rod and connection shall remain accessible

B. Install bonding jumpers between sections of loosely jointed metallic raceways (i.e. expansion fittings and telescoping raceways) to ensure electrical continuity.

C. Where circuit conductors are spliced within a pull box, junction box, or terminated on equipment within or supported by a pull box, junction box, or like, the associated equipment grounding conductor shall be terminated at the box via listed grounding means in accordance to NEC Article 250.

D. Metal raceways, cable trays, enclosures, frames, fittings, and other metal non- current-carrying parts that are to serve as grounding conductors shall be bonded where necessary to ensure electrical continuity per NEC Article 250.96.

E. Ground non-current-carrying metallic parts of fixed, portable, and mobile equipment and associated fences, housings, enclosures, floors, and supporting structures.

F. Bond all conductive components of the conduit system, both interior and exterior, to the building grounding electrode system. Bonding connections shall be made as close as practical to the equipment ground bus.

G. Bond all conductive components of the communications raceways system, including but not limited to: conduit, cable trays, conduit sleeves anticipated for use with low voltage signaling or data cabling. Bonding connections shall be made via two (2) no. 10 AWG copper conductors. Maintain a minimum of 4" separation. Where exposed to physical damage, install a no. 6 AWG copper conductor in lieu of the references no. 10 AWG copper conductor.

H. Grounding Electrodes: Grounding electrodes present at each building or structure shall be bonded together to the grounding electrode system, with exceptions as defined per the NEC. Grounding or bonding conductors shall be connected to the grounding electrode by exothermic welding, listed lugs, listed pressure connectors, listed clamps, or other listed means. Electrodes permitted per NEC Article 250, part III for grounding include:
   1. Metal underground water pipe in direct contact with the earth for 10 feet and electrically continuous.
   2. Metal building frame or structure.
   3. Concrete-encased electrodes.
   4. Ground Rings.
   5. Rod and Pipe Electrodes.
   6. Listed Electrodes.
   7. Plate Electrodes.
   8. Other Local Metal Underground Systems or Structures.

I. Secondary Equipment:
   1. Panelboards, and Loadcenters - Ground conductors of feeders and branch circuits shall terminate at the equipment ground bar or bus. Provide ground bushings for metallic conduits connecting to the physical enclosure. Isolated ground conductors shall terminate at a dedicated/isolated ground bar or bus where indicated on the drawings.
   2. Metallic structures, enclosures, piping, ductwork, raceways, pull boxes, junction boxes, outlet boxes, etc. associated with or in close proximity to shall be bonded and grounded as part of the electrical system.
   3. Fixed Appliances fastened in place or connected by permanent, fixed, wiring methods shall be provided with a ground lug for connection of the branch circuit/feeder equipment grounding conductor.

3.3 TESTING

A. Ground resistance testing shall be conducted per IEEE standards four-point fall -of-potential method to determine the resistance between the ground system and earth.

B. Ground resistance shall not exceed 25 ohms.

C. Ground resistance testing shall be performed in the presence of the authority having jurisdiction.

D. Ground resistance testing report shall be included in O&M documentation and provided to the owner prior to final acceptance.

E. GFI circuit breakers and GFI convenience receptacles shall be thoroughly tested during installation and at the completion of the project.

END OF SECTION 26 05 26

SECTION 26 05 33 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Raceways and boxes for electrical systems.

B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
   1. Principal features of this installation include:
      a. Conduit and associated fittings
      b. Wiremold
      c. Outlet, device, pull, and junction boxes
      d. Conduit bodies

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PROJECT #1824

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DRAWING NO.
E-7

E. CIRCUIT BREAKERS
   1. Molded case type circuit breakers shall be 3/4-inch wide per pole. Multi-pole circuit breakers shall be of a stack pole design to provide electrical phase isolation and have an internal common trip.
   2. Circuit breaker operating handles shall indicate "ON" and "OFF" breaker positions.
   3. Each pole of the circuit breaker will have inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors.
   4. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. Breakers shall be calibrated after assembly.
   5. Circuit breakers shall be operated by a toggle-type handle and multi-pole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide good visual trip indication.
   6. Contacts shall be of non-welding silver alloy.
   7. Each pole shall contain phase barriers and arc quenching.
   8. Circuit breakers shall be molded case thermal-magnetic quick-make/quick-break, over toggle type suitable for use in systems having a short-circuit capacity as indicated on the drawings.
   9. Instantaneous, thermal magnetic, long-time delay trip elements shall be provided per each pole.
   10. Panelboard branch circuit breakers shall be full-size, with a minimum rating of 20 amperes.
   11. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60 degree or 75 degree Celsius wire, unless otherwise specified.
   12. Main Circuit Breakers greater than 125 amperes shall be a molded case design. Main breakers utilizing 4-pole bundled mains are not permitted. Single-phase main breakers 200 amperes and less shall have a side-to-side toggle mechanism allowing for top or bottom mounting.

F. ENCLOSURES
   1. Enclosures shall be mounted, either surface or flush, and have the appropriate NEMA listing (1, 3R, or 4X) as indicated on the drawings.
   2. Boxes shall be made from cold rolled code gauge sheet steel having multiple knockouts, except where noted. Rain tight boxes shall use galvanized steel or an approved coating system which meets or exceeds NEMA standards for outdoor type 3R enclosures. Boxes shall be of sufficient size to provide at least a minimum code gutter space on all sides.
   3. The cover shall have an easy adjustment feature for flush applications.
   4. Covers shall be provided with a lock, and keyed to operate from one key.
   5. Boxes shall be factory assembled into a single rigid structure.

G. FINISH
   1. Boxes and trims shall be finished with a high scratch resistant aesthetically pleasing finish. The finish paint shall be of a type to which field applied paint will adhere.

PART 3 - EXECUTION

3.1 CONDITIONS

A. Panelboards/Load centers shall be installed in locations indicated on the drawings.

B. Provisions shall be made for future conduit/branch circuit installations. In flush mount panels, install one ¾" conduit from the enclosure to an accessible ceiling space location for every four spare circuit breakers or spaces.

C. Maximum circuit breaker height installation shall not exceed +6'7" above finished floor or platform pursuant to the requirements of NEC 404.8(A).

D. The depth of structure shall be adequate to accommodate flush mounted enclosures.

3.2 FINISHING

A. Protect panelboards/load centers pursuant to Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL until final acceptance by owner.

B. Provide circuit breaker marking labels and directories. Directories shall be typewritten and included in a plastic sleeve. Mount directories on the interior face of the equipment cover. Marking labels and directories shall reflect as-built conditions and final room names.

C. The key to the panelboard shall be left inside the plastic circuit breaker directory sleeve or provided to the owner upon final acceptance.

3.3 COMPLETION

A. Demonstrate operation of equipment to owner prior to acceptance.

END OF SECTION 26 14 16

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Panelboards.

B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification. Panelboards shall be furnished and installed with the quantity, rating, and type of circuit breakers as shown on the contract documents.

1.2 RELATED SECTIONS
   1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
   2. Section 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEM
   3. Section 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
   4. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
   5. Section 26 05 26 GROUNDING FOR ELECTRICAL SYSTEMS

A. Related Sections Under Other Divisions:
   1. The General provisions, including supplementary conditions, of this contract apply to this section.

1.3 SYSTEM DESCRIPTION

A. SUBMITTALS AND SHOP DRAWINGS
   1. In addition to Section 26 05 00 COMMON RESULTS FOR ELECTRICAL requirements, the following shall be submitted to the Engineer of Record prior to procurement:
      a. Dimensioned outline drawing.
      b. Component list.
      c. Knockout configurations.
      d. Cable terminal sizes, including maximum conductor rating that can be terminated.
      e. Enclosure and door assembly.
      f. Panelboard ratings, including:
         1) Continuous Current (i.e. "Ampacity")
         2) Voltage and phase
         3) Short Circuit Rating in "kAIC".
      g. Circuit Breaker ratings, including:
         1) Breaker type (i.e. plug-in, bolt on)
         2) Continuous Current (i.e. "Ampacity")
         3) Voltage and phase
         4) Interrupting Rating in "kAIC".
   2. The following shall be included in the O&M manual and provided to the facility owner prior to final acceptance:
      a. Final as-built conditions documenting changes made during construction.
      b. Wiring Diagrams
      c. Certified production test reports
      d. Installation information, including equipment anchorage provisions.

1.4 GUARANTEES

A. Independent testing laboratory listing is required. Note Underwriters Laboratories, "UL", is referenced throughout this specification. However, equivalent listing agencies will be accepted.

B. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.

C. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.

D. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.

1.5 REQUIREMENTS
   1. Panelboards, load centers, and associated components and circuit breakers shall be manufactured, tested, and installed in accordance to the latest published requirements of the following codes and standards:
   1. National Electrical Code (NEC) with California State and local jurisdiction amendments.
   2. UL 67 - Standards for Panelboards
   3. UL 50 - Standards for Cabinets and Boxes
   4. UL 489 - Standards for Molded Case Circuit Breakers
   5. UL 1699 - Arc-Fault Circuit Interrupters
   6. UL 869 - Standards for Service Equipment
   7. UL 486B - Requirements for Wire Connectors and Soldering Lugs
   8. Federal Specification W-C 375 A and B - Circuit Breakers
   9. Federal Specification W-P-115c - Panel, Power Distribution
   10. NEMA Standard PB1 - Panelboards
   11. NEMA Standard AB3 - Molded Case Circuit Breakers

PART 2 - PRODUCTS

2.1 MATERIALS

A. The listing of specific manufacturers below does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer of record ten (10) days prior to bid date.
   1. Eaton Cutler Hammer / Eaton Corporation
   2. Square-D
   3. Siemens

2.2 PANELBOARDS

A. RATINGS
   1. Panelboards shall be rated for AC voltage and short-circuit as indicated on the drawings.
   2. Panelboards shall be labeled with the UL short-circuit rating from the manufacturer.

B. CONSTRUCTION
   1. Dead-front construction shall be utilized.
   2. Interiors, with the exception of the branch circuit breakers, shall be completely factory assembled with a main breaker, main lugs only, or double lugs as specified on the drawings.
   3. Where double lugs are not permitted by the authority having jurisdiction, provide a pull box or gutter, sized per NEC code as required for connections. The pull box or gutter shall be located adjacent to the panelboard enclosure.
   4. Interiors shall be designed so that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors. In addition, interiors shall be designed so that circuits may be changed without machining, drilling or tapping.
   5. Physical means must be provided to prevent the installation of more over-current devices than that number for which the enclosure was designed. Full size breakers are required.

C. BUS
   1. Bus bars for the main and cross connectors shall be of copper construction in accordance with UL (or equivalent) standards. Busing shall be braced throughout to conform to industry standard practice governing short-circuit stresses in load centers. All connection points shall be tin-plated copper. Bus bars shall be mounted to a rigid metal backpan.
   2. Neutral bus shall have a suitable lug for each outgoing feeder requiring a neutral connection that is the same of same ampacity as the branch circuit.

D. WIRING/TERMINATION
   1. Wire, connectors, and terminals shall be of the anti-turn solderless type and suitable for copper or aluminum wire of the sizes indicated in the construction documents. Connectors shall meet UL 486B.
   2. Load centers shall be suitable for use with 60/75 degrees Celsius rated wire.

SECTION 26 05 53 - IDENTIFICATION OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Identification of electrical systems.

B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
   1. Principal features of this installation include identification of electrical systems by means of:
      a. Warning ribbon
      b. Arc Flash Signage
      c. Name Plates
      d. Device Labels and tags

1.2 RELATED SECTIONS
   1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
   2. Section 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
   3. Section 26 24 16 PANELBOARDS AND LOAD CENTERS

A. Related Sections Under Other Divisions:
   1. The General provisions, including supplementary conditions, of this contract apply to this section.

1.3 REQUIREMENTS

A. Identification of electrical systems shall be performed and installed in accordance to the latest publication of the following codes and standards:
   1. National Electrical Code (NEC) with California State Amendments.
   2. ANSI Z535.4 Guidelines - Product Safety Signs and Labels
   3. National Fire Prevention Association Standard for Electrical Safety Requirements for Employee Workplaces (NFPA 70E).

1.4 PERFORMANCE

A. Labels shall be suitable for the environment where they are installed with consideration given to exposure to chemicals, sunlight, and abrasion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Nameplates
   1. Normal Power: Black lamicoid with white letters fastened with round head, stainless steel screws.

B. Warning Ribbon - Min. 6" wide made of polyethylene film or detectable laminated aluminum designed for direct burial. Warning ribbon shall not be made of materials that will biodegrade.

C. Warning Signs - Printed adhesive polyester protected by clear polyester laminate for general use. Provide rigid polyethylene signage where abrasion is of concern or where adhesive signage is not appropriate.

PART 3 - EXECUTION

3.1 INSTALATION

A. Warning Ribbon
   1. Warning ribbon or tape shall be installed in conduit trenches as identified on the drawings. Pursuant to the NEC, warning tape shall be required for conductors that are not concrete encased and buried 18" below grade or more.
   2. Warning ribbon or tape shall be installed in trenches at not more than 12" above the underground installation.

B. Arc Flash Signage
   1. Electrical equipment, such as panelboards that are in other than dwelling occupancies, and are likely to require examination, adjustment, servicing, or maintenance while energized shall be field marked to warn qualified persons of potential electric are flash hazards. The marking shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment pursuant to NEC 110.16.
   2. Arc Flash labels shall meet the requirements of NFPA 70E and contain the following information:
      a. At least *one* of the following:
         1) Calculated available incident energy and corresponding working distance
         2) Minimum arc rating of clothing
         3) Required PPE (Personal Protective Equipment)
         4) Highest Risk Category (HRC) for the equipment
      b. Nominal system voltage
      c. Arc flash boundary

C. Name Plates
   1. Nameplates shall be provided for electrical equipment enclosures such as, but not limited to: service and/or distribution switchgear, motor controls, transformers, panels, load centers, lighting control panels, fire alarm control panels, cabinets, motors, generators, inverters, uninterruptible power supplies (UPS), and transfer switches.
   2. Nameplates shall be provided for separately enclosed devices such as, but not limited to: circuit breakers, disconnect switches, contactors, time clocks, and relays.
   3. The following, minimum, information shall be included on equipment and enclosed device identification:
      a. Voltage Rating
      b. Source
      c. Load Served
      d. Circuit/Feeder designation
      e. Primary and secondary voltages and load served (transformers only).

D. Available Fault Current
   1. Service equipment, excluding dwelling units shall be marked with the available fault current and date of calculation / equipment installation in accordance to CEC 110.24(A).

E. Device Labels
   1. Isolated ground receptacles in patient care areas shall be identified with a permanent sign or label that reads: "Caution-Not for Patient Equipment Use" per NEC 517.16.
   2. Switches not within sight from the load controlled.
   3. Junction boxes shall be labeled with the branch circuit and/or feeder conductors passing through the box. Hand-written labeling via permanent marker is acceptable provided it is in a visible location and is legible.

F. Raceway Identification (Tags)
   1. Identify conductors at each termination. Tag conductors with sleeve type labels.
   2. The following, minimum, information shall be included on wire and cable identification:
      a. Circuit number or load identification tag number,
      b. Origin from source.
      c. Destination to load.

G. Grounding Conductors larger than 6 AWG
   1. Grounding conductors larger than 6AWG shall have the insulation or covering marked with green tape or green adhesive labels at the termination pursuant to NEC 250.119.

END OF SECTION 26 05 53

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