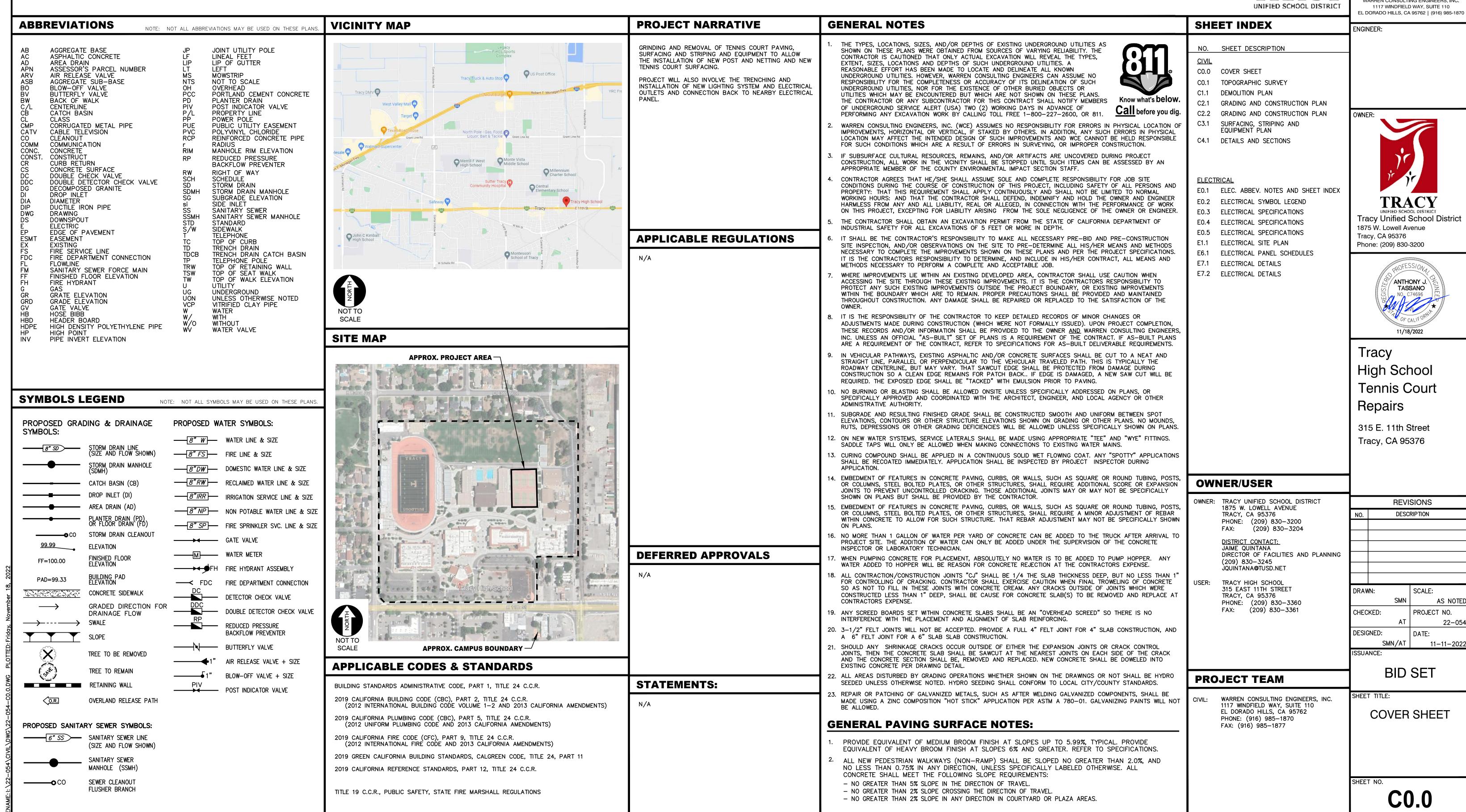
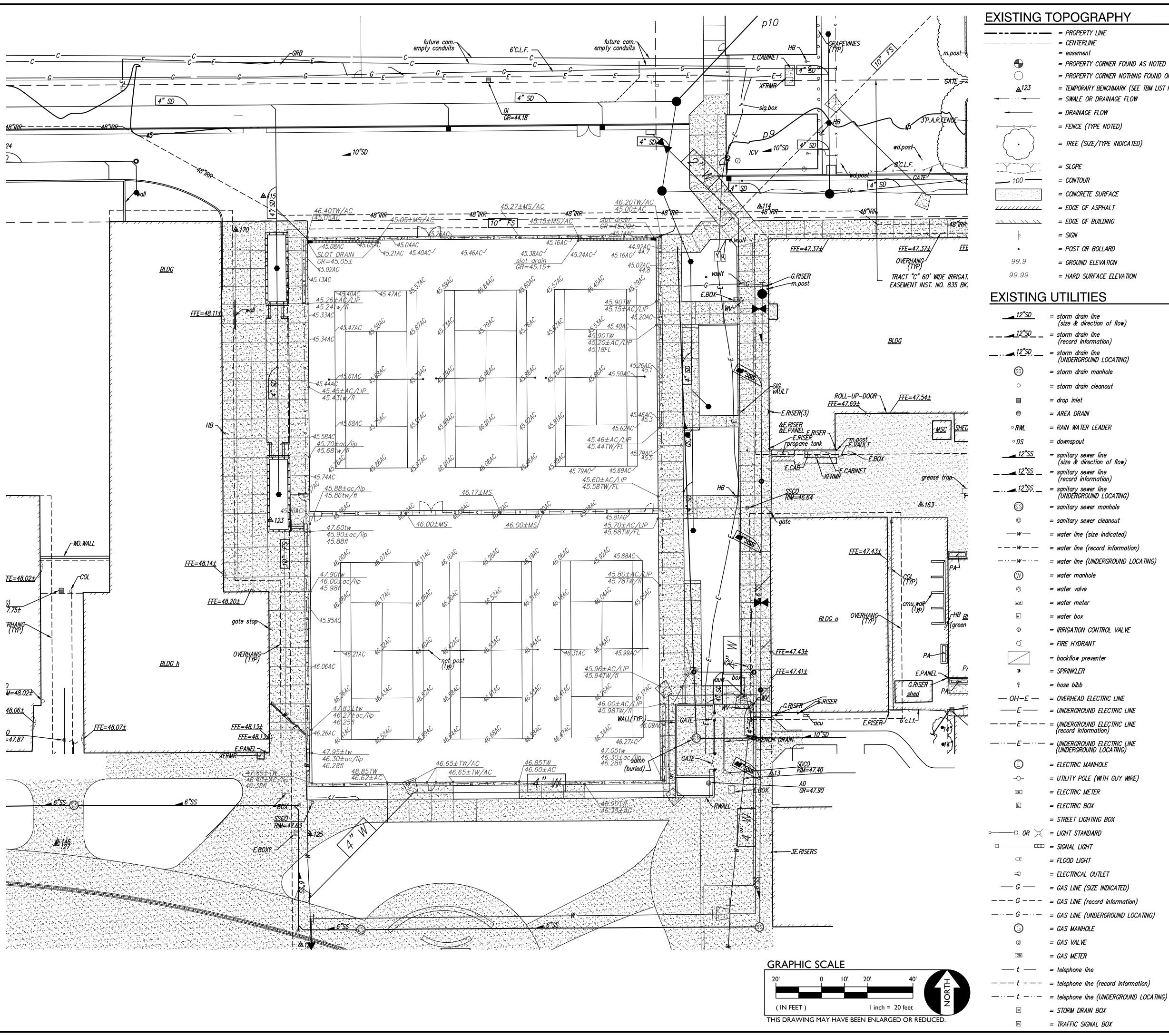
TRACY HIGH SCHOOL TENNIS COURT REPAIRS

315 EAST 11th STREET TRACY, CA 95376



WARREN CONSULTING ENGINEERS, INC.
1117 WINDFIELD WAY, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870





ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED ON THESE PLANS.

area draiņ

building BOLLARD

стр

conc. cond. cpf

blow-off valve BRICK

asphaltic concrete ACCESSIBLE

air release valve

back flow preventer BLOCK

BARBED WIRE FENCE

COMMUNICATION centerline CABLE TELEVISION

CAPPED IRON PIPE

CHAIN LINK FENCE

control point found

control point set CONCRETE SURFACE

drinking fountain

decomposed granite drop inlet

edge of pavement

fire department connection

finished floor elevation

double detector check valve

COLUMN

concrete

condensate

diameter

driveway

downspout drawing ELECTRIC

easement

fire alarm

fire hydrant

GRADE BREAK grate GROUND ROD BOX

ground rod

HEADER BOARD

high PRESSURE HANDRAIL

HIGH VOLTAGE ELECTRIC HOG WIRE FENCE

irrigation control PANEL irrigation control valve

low voltage ELECTRIC METAL

OVERHEAD OVERHANG OPEN IRON PIPE OLD STEEL POST HOLE

METAL STORAGE CONTAINER

pipe invert elevation

joint utility pole joint trench LANDING

manhole

MOW STRIP

not to scale

property line PLANTER AREA

POSTHOLE

PARKING BUMPER

post indicator valve

power pole parking public utility easement PAVERS

manhole rim elevation

right of way REDUCED PRESSURE BACKFLOW PREVENTER

polyvinyl chloride RUBBER

RETAINING WALL

RAIN WATER LEADER storm drain

storm drain manhole SIGNAL STREET LIGHT

sanitary sewer cleanout sanitary sewer manhole

tether ball pole TEMPORARY BENCHMARK

telephone pole top of retaining wall

wrought iron fence WOOD RAIL FENCE TRANSFORMER crosswalk

street light box sanitary sewer

STEEL TELEPHONE

top of curb top of wall

underground UNKNOWN volleyball WATER

with without wood

gas valve HOSE BIBB

flowline fiber optic fire service GAS

corrugated metal pipe

air conditioning unit

assessor's parcel number

basketball pole BRASS CAP MONUMENT

= PROPERTY CORNER FOUND AS NOTED = PROPERTY CORNER NOTHING FOUND OR SET = TEMPORARY BENCHMARK (SEE TBM LIST FOR INFO)

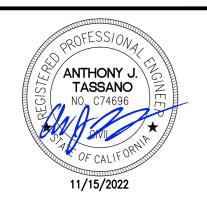
> OHANG OIP OSPH p/l ug UNK vball

ENGINEER

1117 WINDFIELD WAY, SUITE 110

EL DORADO HILLS, CA 95762 | (916) 985-1870 ENGINEER:

Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tracy High School **Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

DESCRIPTION DRAWN: SCALE: AS NOTED CHECKED: PROJECT NO. 22-054 DESIGNED: DATE: SMN/AT 11-11-2022

REVISIONS

BID SET

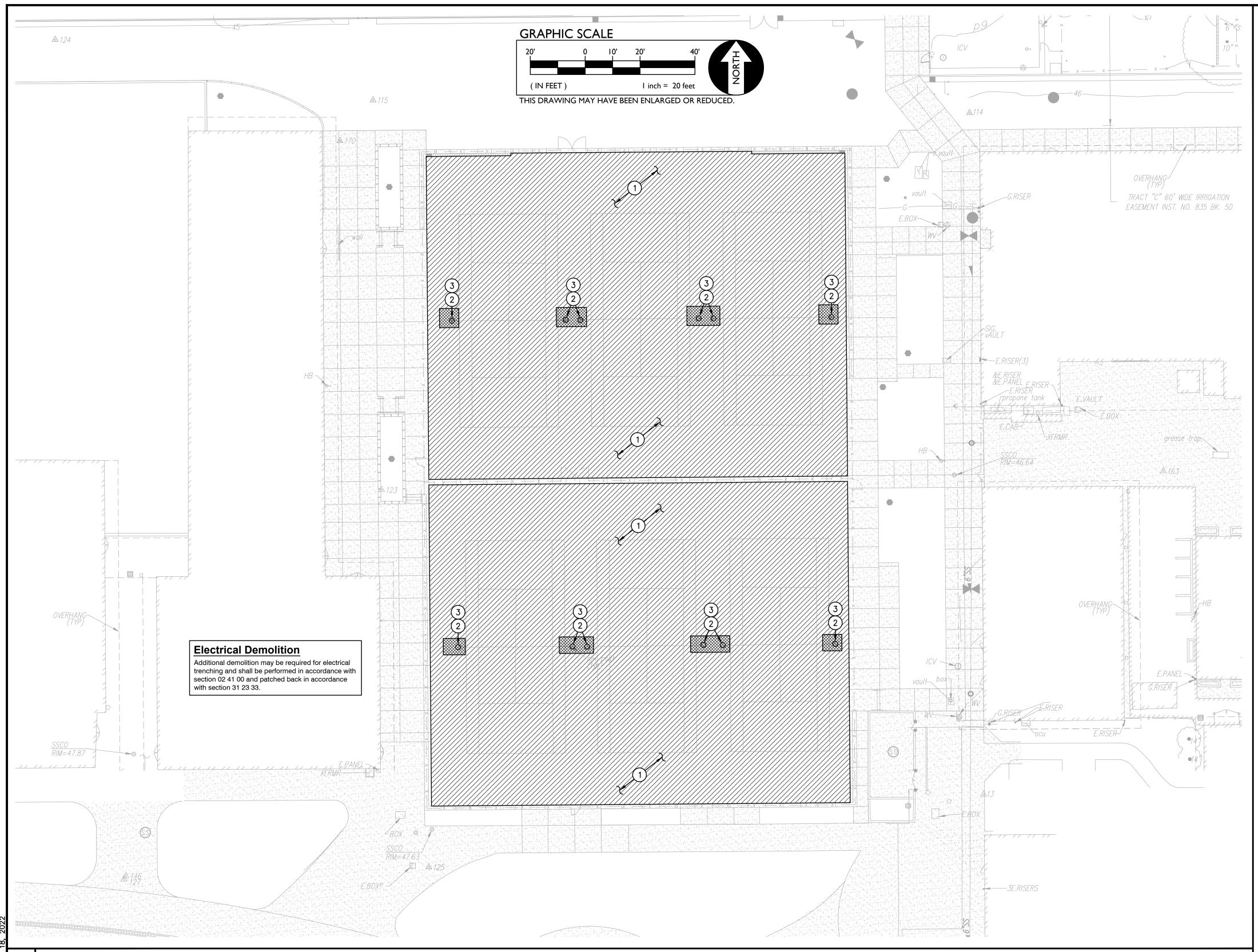
SHEET TITLE:

ISSUANCE:

TOPOGRAPHIC SURVEY

SHEET NO.

C_{0.1}



DEMOLITION NOTES SCALE 1" = 20'-0'

CAL-GREEN - Waste Diversion:

5.408.1 Construction waste management. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more

5.408.1.1 Construction waste management plan. Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that:

- Contractor shall Identify the construction and demolition waste materials to be diverted from disposal, to comply with 65% criteria listed above, by efficient usage, recycling, reuse on the project or salvage for future use or sale. Contractor shall determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed
- (single stream). Either method is the responsibility of the contractor. Contractor shall Identify diversion facilities where construction and demolition waste material collected will be taken. Transport to
- Contractor shall record and provide record of the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

5.408.1.2 Waste management company. Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition

waste material diverted from the landfill complies with this section. Contractor shall make the determination if the construction and demolition waste material

will be diverted by a waste management company. Contractor shall make any and all arrangements with waste management company for pickup of materials.

Exceptions to Sections 5.408.1.1 and 5.408.1.2: Excavated soil and land-clearing debris.

- Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.
- Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets.
- 5.408.1.3 Waste stream reduction alternative. The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.

CAL-GREEN - Waste Diversion Documentation Required:

(Ref Calgreen 5.408.1.4) Contractor shall prepare and provide documentation to the enforcing agency which demonstrates compliance with Calgreen Sections 5.408.1.1 through 5.408.1.3. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

1. Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located at http://www.bsc.ca.gov/Home/CALGreen. aspx may be used to assist in documenting compliance with the waste management plan.

Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

CAL-GREEN - Excavated Soil & Land Clearing:

5.408.3 Excavated soil and land clearing debris. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

Exception: Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.

1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material.

(www.cdfa.ca.gov/exec/county/county_contacts.html) 2. For a map of known pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture. (www.cdfa.ca.gov)

Concrete Sawcut Note:

SAWCUTS AND SUBSEQUENT PATCH BACK OF CONCRETE WALKS, SHALL BE TO THE EXISTING CONCRETE JOINT BEYOND NEAREST THE LOCATION OF DEMOLITION AS SHOWN. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE, SHOW AND COORDINATE WITH EXISTING JOINTS, HOWEVER IF FIELD CONDITIONS ARE OTHERWISE, IT IS UNDERSTOOD TO REMOVE AND PATCH BACK TO THE NEAREST JOINTS BEYOND DEMOLITION.

Dust Control:

CONTRACTOR SHALL PROVIDE DUST CONTROL MEASURES AT ALL TIMES WHEN A SITE CONSTRUCTION ACTIVITY MAY GENERATE AIRBORNE DUST, INCLUDING BUT NOT LIMITED TO, APPLICATION OF WATER, HAUL TRUCK COVERS, STOCKPILE COVERS, STRAW/MULCH, APPROVED SOIL STABILIZATION CHEMICALS/TACKIFIERS, RETAINED VEGITATION, HYDROSEED, ETC. REFER TO CONTRACTORS SWPPP, PROJECT SPECIFICATION SECTION 31 10 00, 1.06.

Utility Verification Note:

PRIOR TO THE START OF CONSTRUCTION, VERIFY AND POTHOLE ALL UTILITY POINTS OF CONNECTION FOR LOCATION, DEPTH, AND SIZE. IF CONFLICT IS FOUND, CONTACT THE ENGINEER IMMEDIATELY FOR DIRECTION.

DEMOLITION GENERAL NOTES

- IN THE EVENT THAT ANY UNUSUAL CONDITIONS NOT COVERED BY THE GEOTECHNICAL INVESTIGATION REPORT OR ARE ENCOUNTERED DURING GRADING OPERATIONS THE GEOTECHNICAL ENGINEER AND THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTIONS.
- NO BURNING OR BLASTING SHALL BE PERMITTED.
- ADDITIONAL DEMOLITION INFORMATION MAY BE SHOWN ON THE GRADING, DRAINAGE, AND UTILITY PLANS, AND THOSE PLANS PREPARED BY OTHER DISCIPLINES FOR THIS PROJECT.
- 4. ALL DEMOLISHED ITEMS SHALL BE DISPOSED OF OFFSITE AT A SUITABLE, LEGAL, DUMP SITE OR OTHER FACILITY.
- 5. ALL DISPOSED OF MATERIALS SHALL BE RECYCLED IF POSSIBLE.
- 6. THE TYPES, LOCATIONS, SIZES AND/OR DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN IN THESE PLANS WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE TYPES, EXTENT, SIZES, LOCATIONS, AND DEPTHS OF SUCH UNDERGROUND UTILITIES. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UNDERGROUND UTILITIES. HOWEVER, WARREN CONSULTING ENGINEERS CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES, NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR OR ANY SUBCONTRACTOR FOR THIS CONTRACT SHALL NOTIFY THE DISTRICT TWO (2) WORKING DAYS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK IN ORDER TO VERIFY TO THE GREATEST EXTENT POSSIBLE THE EXISTING UTILITY LINES, CONFLICTS AND PROPOSED UTILITY CONNECTION POINTS.



THE SCHOOL DISTRICT SHALL HAVE SALVAGE RIGHTS TO ANY DEMOLISHED ITEMS SHOWN HEREON. THE CONTRACTOR SHALL GIVE THE DISTRICT NOTICE 7 DAYS PRIOR TO THE START OF DEMOLITION. THE DISTRICT SHALL MOVE ANY RETAINED ITEMS OUT OF THE CONTRACTORS WORK AREA, UNLESS ANOTHER ARRANGEMENT IS MADE WITH THE CONTRACTOR. ANY REMAINING ITEMS BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. ANY ITEMS NOT SHOWN FOR REMOVAL SHALL REMAIN AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION TO A REASONABLE EXTEND.

- EXISTING UTILITY STRUCTURES IN AREAS OF NEW PAVING SHALL BE REMOVED AND REINSTALLED AT NEW GRADE UNLESS SPECIFICALLY NOTED OTHERWISE.
- 9. ITEMS OUTSIDE THE LIMITS OF DEMOLITION SHALL REMAIN AND BE PROTECTED FROM DAMAGE DURING CONSTRUCTION..
- 10. CONTRACTOR SHALL COMPLY WITH CHAPTER 33 OF THE 2014 CFC, "FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION" AT ALL TIMES DURING CONSTRUCTION.
- 1. CONTRACTOR SHALL HIRE A UTILITY LOCATING COMPANY AND SHALL SCAN THE ENTIRE AREA WITHIN THE LIMITS OF NEW WORK. ALL UTILITIES LOCATED SHALL BE MARKED AND PROTECTED DURING THE LIMING OPERATIONS AS WELL AS ANY EXCAVATING TASKS. ANY LOCATED UTILITY DAMAGED WITHIN THE LIMITS OF WORK WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
- ALL DEMOLITION SHALL BE APPROPRIATELY SUPPORTED AND REINFORCED DURING REMOVAL TO PREVENT INJURY FROM FALLING, PROJECTILE, OR OTHERWISE MOVING DEBRIS OR OTHER DELETERIOUS MATERIAL. ONSITE SAFETY WITHIN THE LIMITS OF WORK IS THE CONTRACTORS SOLE RESPONSIBILITY.

DEMOLITION NOTES

DEMOLITION NOTES



- GRIND EXISTING ASPHALT 1.5" DEEP TO ALLOW FOR NEW OVERLAY. CLEAN CRACK FILL AND PATCH ASPHALT PRIOR TO OVERLAY.
- 2. REMOVE EXISTING TENNIS NET GAME POSTS AND CONCRETE BASE. BACKFILL VOID PER EARTHWORK SPECIFICATIONS, OR WITH CLASS II AB COMPACTED IN 6" LIFTS, EACH COMPACTED TO 95%.



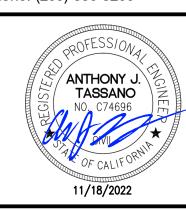
SAWCUT AND REMOVE EXISTING PAVING TO ALLOW GAME POST AND FOOTING REMOVAL.

1117 WINDFIELD WAY, SUITE 110

EL DORADO HILLS, CA 95762 | (916) 985-1870

ENGINEER:

Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tracy High School **Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

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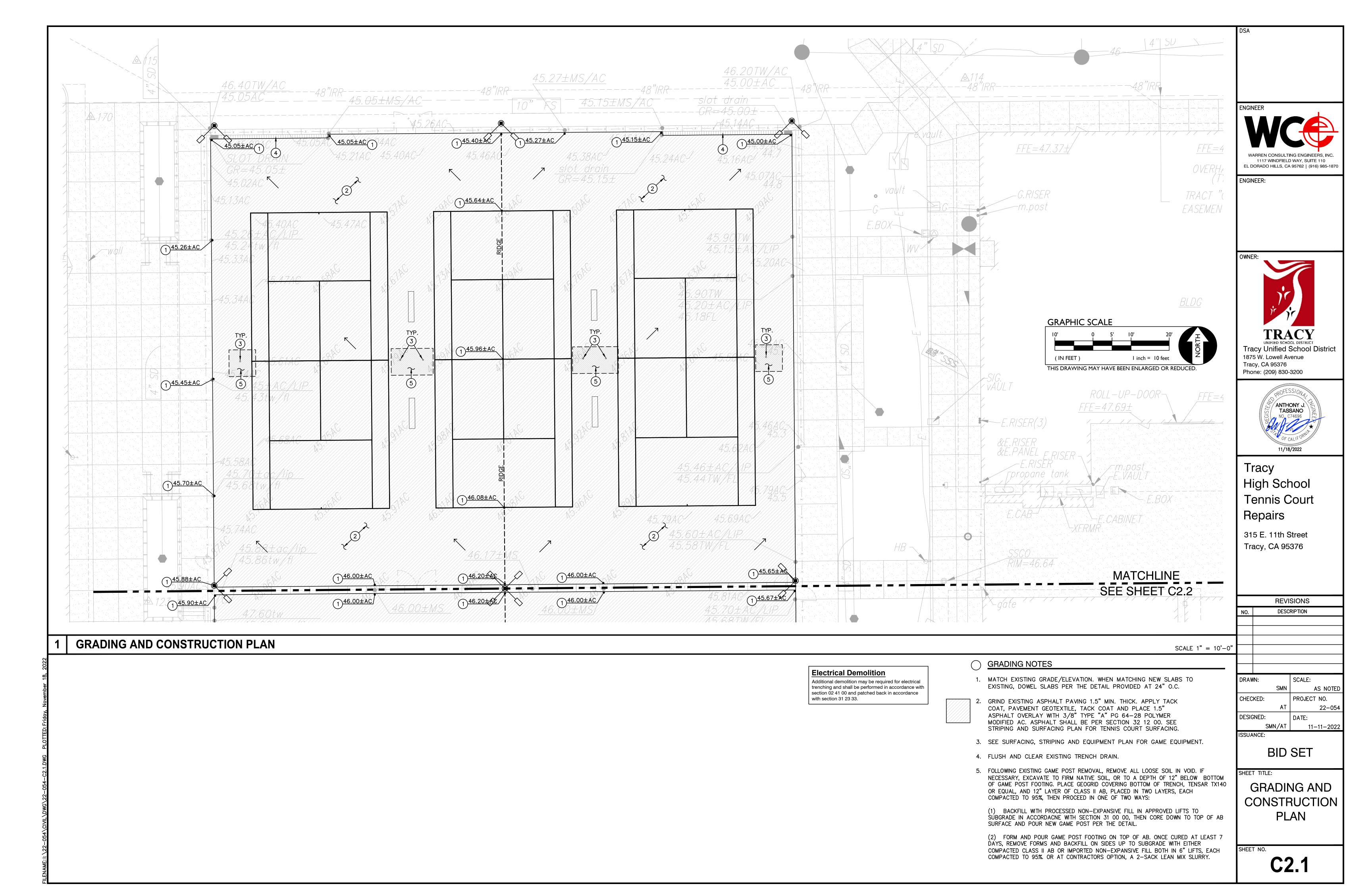
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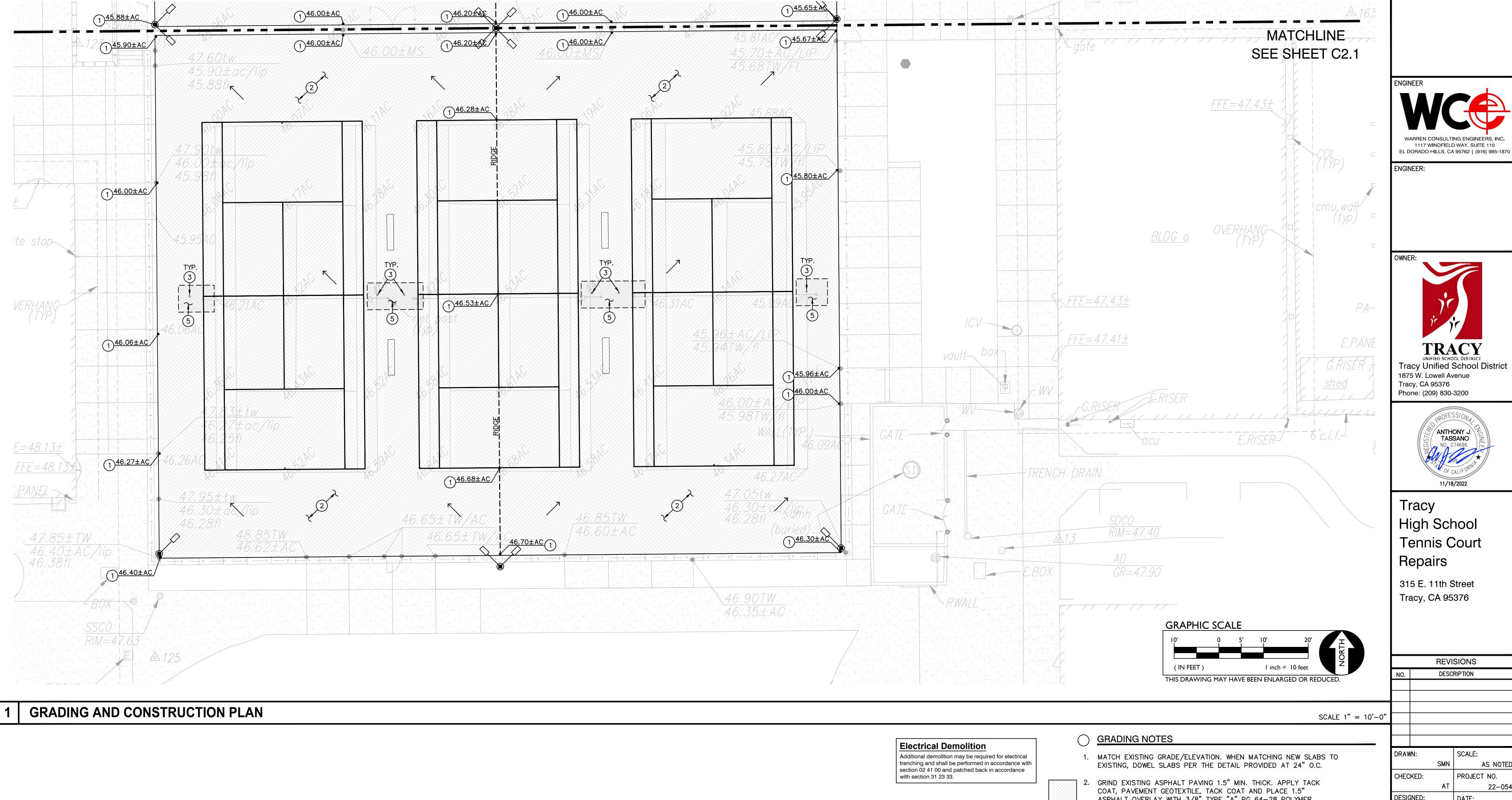
DESCRIPTION

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SHEET TITLE:

ISSUANCE:





ASPHALT OVERLAY WITH 3/8" TYPE "A" PG 64-28 POLYMER MODIFIED AC. ASPHALT SHALL BE PER SECTION 32 12 00. SEE STRIPING AND SURFACING PLAN FOR TENNIS COURT SURFACING.

- 3. SEE SURFACING, STRIPING AND EQUIPMENT PLAN FOR GAME EQUIPMENT.
- 4. FLUSH AND CLEAR EXISTING TRENCH DRAIN.
- 5. FOLLOWING EXISTING GAME POST REMOVAL, REMOVE ALL LOOSE SOIL IN VOID. IF NECESSARY, EXCAVATE TO FIRM NATIVE SOIL, OR TO A DEPTH OF 12" BELOW BOTTOM OF GAME POST FOOTING. PLACE GEOGRID COVERING BOTTOM OF TRENCH, TENSAR TX140 OR EQUAL, AND 12" LAYER OF CLASS II AB, PLACED IN TWO LAYERS, EACH COMPACTED TO 95%, THEN PROCEED IN ONE OF TWO WAYS:

(1) BACKFILL WITH PROCESSED NON-EXPANSIVE FILL IN APPROVED LIFTS TO SUBGRADE IN ACCORDACNE WITH SECTION 31 00 00, THEN CORE DOWN TO TOP OF AB SURFACE AND POUR NEW GAME POST PER THE DETAIL.

(2) FORM AND POUR GAME POST FOOTING ON TOP OF AB. ONCE CURED AT LEAST 7 DAYS, REMOVE FORMS AND BACKFILL ON SIDES UP TO SUBGRADE WITH EITHER COMPACTED CLASS II AB OR IMPORTED NON-EXPANSIVE FILL BOTH IN 6" LIFTS, EACH COMPACTED TO 95%. OR AT CONTRACTORS OPTION, A 2-SACK LEAN MIX SLURRY.

SCALE: AS NOTED PROJECT NO. 22-054 DESIGNED: DATE: SMN/AT 11-11-2022

REVISIONS DESCRIPTION

ANTHONY J. TASSANO

ISSUANCE:

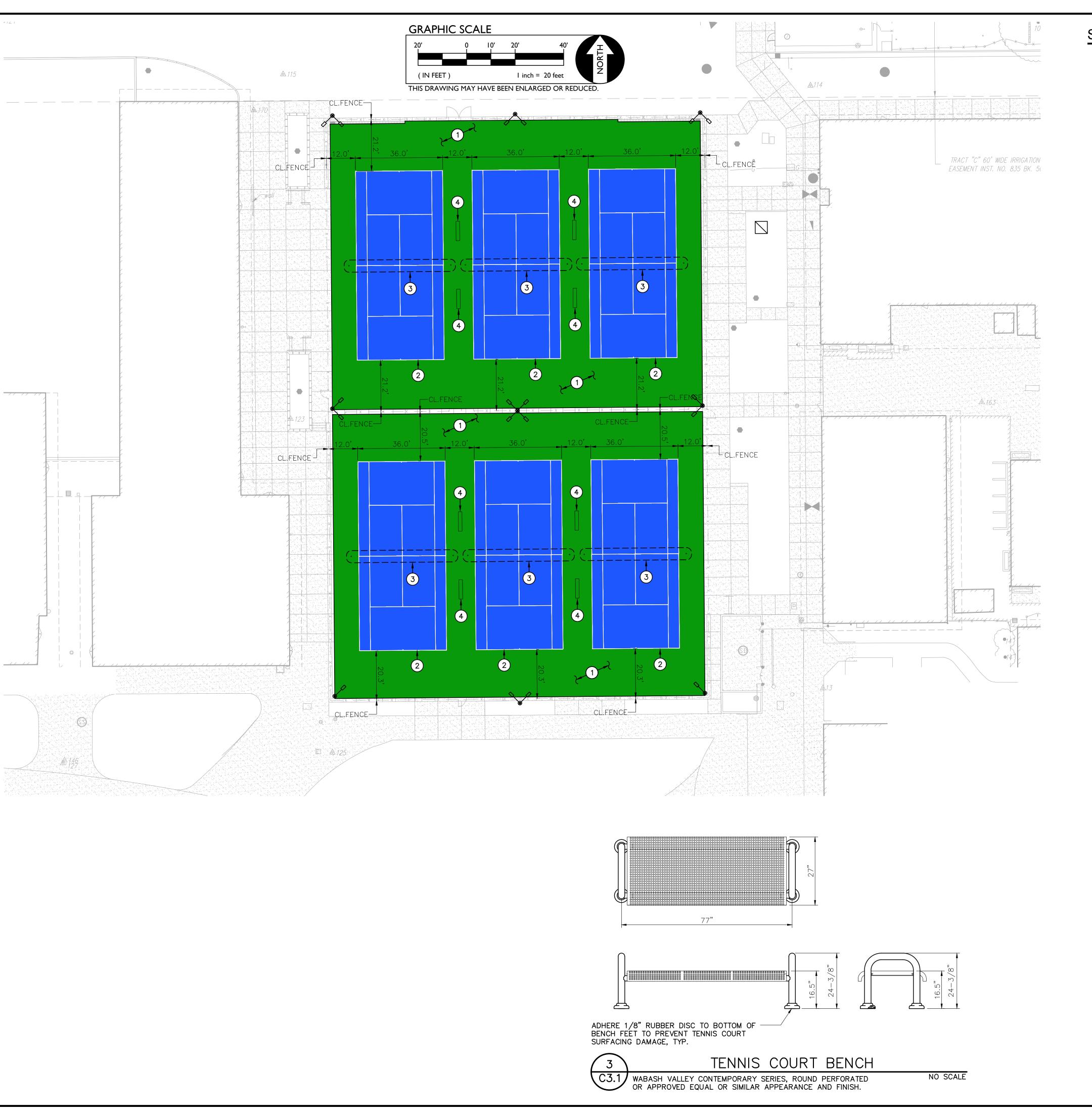
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GRADING AND CONSTRUCTION PLAN

SHEET NO.

C2.2



STRIPING & EQUIPMENT PLAN

STRIPING NOTES

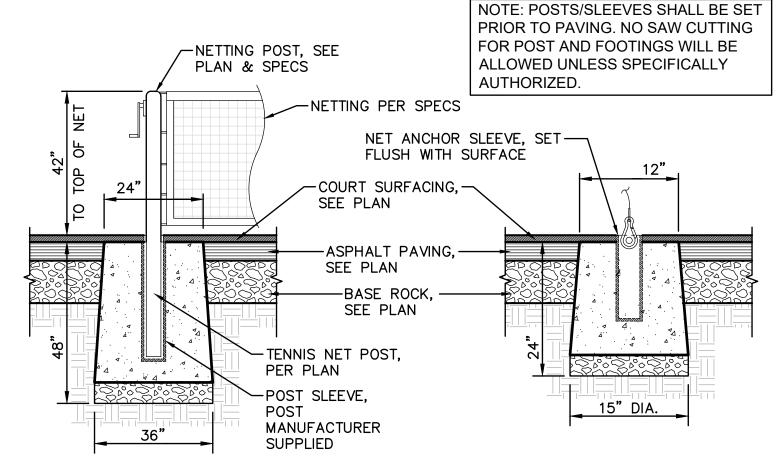
 PROVIDE AND INSTALL COMPLETE PLEXI TENNIS COURT SURFACING SYSTEM OR APPROVED EQUAL. INSTALLATION SHALL INCLUDE MIN. 2 COATS SANDED PLEXI ACRYLIC RE—SURFACER AND 2 COATS PLEXIPAVE SAND FORTIFIED COLOR. PROVIDE ALTERNATE INNER COURT COLORING AS INDICATED BELOW. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH CALIFORNIA SPORT SURFACES INSTALLATION RECOMMENDATIONS.

INNER COURT, DARK BLUE*

OUTER COURT, MEDIUM GREEN*

 \star = COLORING SUBJECT TO CHANGE. OWNER TO APPROVE FINAL COLORS THROUGH SHOP DRAWING REVIEW PRIOR TO CONTRACTOR ORDERING.

- 2. PROVIDE COURT LINE STRIPING WITH "PLEXIPAVE", WHITE, OR APPROVED $\boxed{\frac{2}{C3}}$
- 3. PROVIDE AND INSTALL TENNIS COURT NETTING SYSTEM, EDWARDS, WIMBLEDON 3" SQUARE POST SYSTEM, OR APPROVED EQUAL, WITH CENTER COURT NET ANCHOR, COLOR GREEN WITH GROUND SLEEVE INSTALLATION. SEE MANUFACTURERS RECOMMENDATIONS FOR INSTALLATION.
- 4. PROVIDE AND LOCATE 6' LONG BACKLESS BENCH, WABASH VALLEY CONTEMPORARY SERIES, ROUND PERFORATED, OWNER TO SELECT COLOR. ADHERE 1/8" RUBBER DISC TO BOTTOM OF BENCH FEET TO PREVENT TENNIS COURT SURFACING DAMAGE, SEE DETAIL PROVIDED.



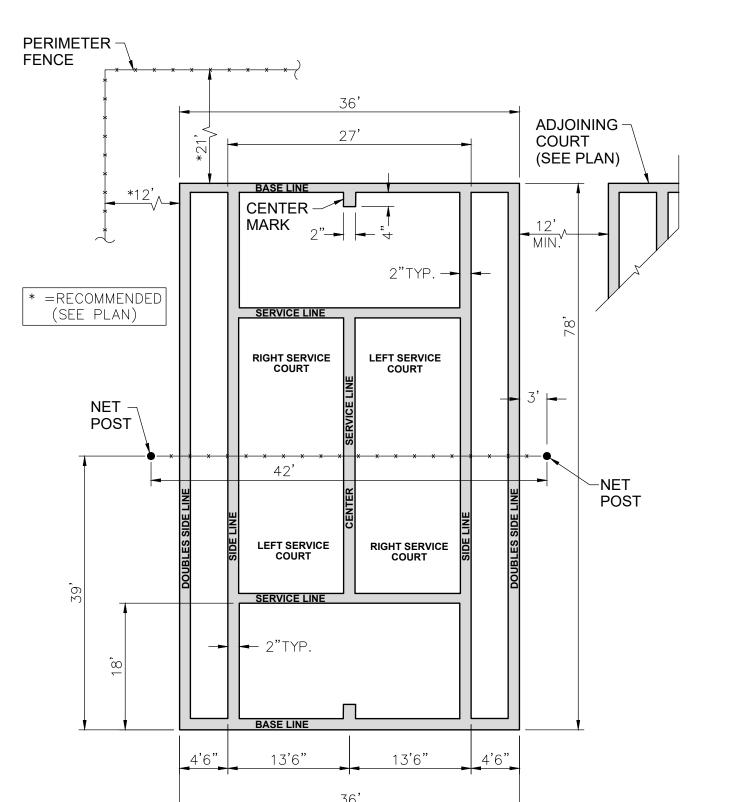
(1) (C3.1)

NET POST DETAIL

TENNIS NET POST DETAIL

NO SCALE

CENTER COURT NET ANCHOR



(2) (C3.1) TYPICAL TENNIS COURT LAYOUT

NO SCALE

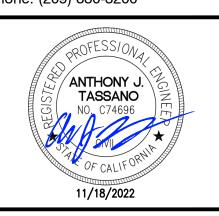
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ENGINEER:

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Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tracy
High School
Tennis Court
Repairs

315 E. 11th Street Tracy, CA 95376

		REVI	SIONS		
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CHECKED: PROJECT NO.

AT 22-054

DESIGNED: DATE:

SMN/AT 11-11-2022

ISSUANCE:

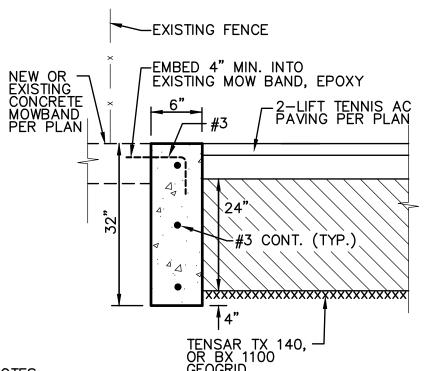
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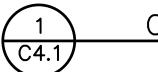
SURFACING, STRIPING AND EQUIPMENT PLAN

SHEET NO.



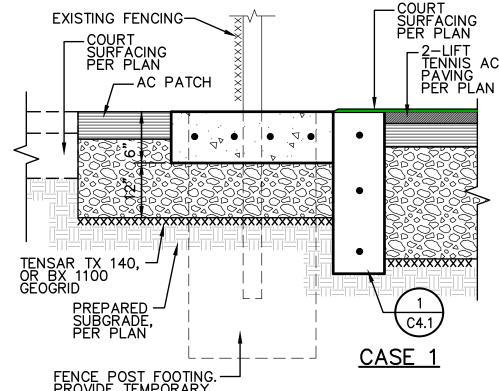


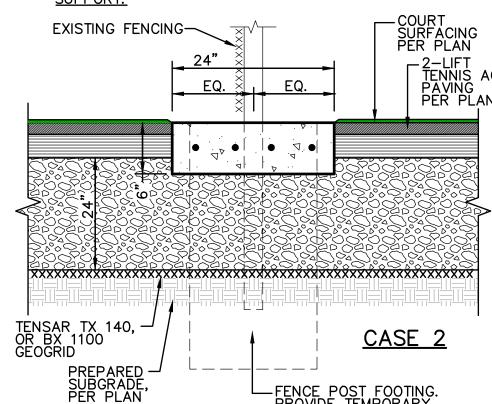
- 1. PROVIDE FELT EXPANSION JOINTS (E.J.) AT 60 FEET O.C. PROVIDE CONTROL JOINTS AT 10 FEET O.C., EXCEPT WHEN PLACING ADJACENT TO CONCRETE WALKS THE EXPANSION JOINTS SHALL ALIGN WITH THE EXPANSION JOINTS SHOWN FOR THE CONCRETE WALKS.
- 2. AT E.J. USE 1/2"X24" SMOOTH DOWELS, ALIGN WITH REBAR, GREASE 1/2 THE LENGTH BEFORE CONCRETE PLACEMENT.



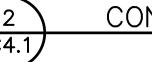
CONCRETE CURB

NO SCALE





- 1. PROVIDE FELT EXPANSION JOINTS (E.J.) AT 60 FEET O.C. PROVIDE CONTROL JOINTS AT 10 FEET O.C., EXCEPT WHEN PLACING ADJACENT TO CONCRETE WALKS THE EXPANSION JOINTS SHALL ALIGN WITH THE EXPANSION JOINTS SHOWN FOR THE CONCRETE WALKS.
- AT E.J. USE 1/2"X24" SMOOTH DOWELS, ALIGN WITH REBAR, GREASE 1/2 THE LENGTH BEFORE CONCRETE PLACEMENT.



CONCRETE APRON

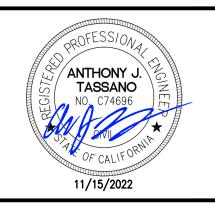
NO SCALE

1117 WINDFIELD WAY, SUITE 110 EL DORADO HILLS, CA 95762 | (916) 985-1870

ENGINEER:

TRACY
UNIFIED SCHOOL DISTRICT

Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tracy High School **Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

REVISIONS DESCRIPTION

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DETAILS AND SECTIONS

SHEET NO.

C4.1

UNDERGROUND TRENCHING NOTES

- UNDERGROUND TRENCHING:
- A.USE EXTREME CAUTION WHEN DIGGING TO AVOID BURIED ELECTRICAL CABLES. CALL UNDERGROUND SERVICE ALERT (U.S.A.) 800-227-2600, 48 HOURS BEFORE DIGGING
- B.BEFORE START OF ANY UNDERGROUND TRENCHING FOR CONDUIT RUNS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH ALL PLANS OF OTHER TRADES (ARCHITECTURAL, CIVIL, LANDSCAPE). AND SITE CONDITIONS TO AVOID CONFLICT.
- C.TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. COORDINATE WITH CIVIL, LANDSCAPE, AND ARCHITECTURAL SITE PLAN PRIOR TO THE TRENCHING, ETC. AND THE INSTALLATION OF THE ELECTRICAL SYSTEM.
- D.ALL UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC, UL LISTED FOR DIRECT BURIAL, AND TERMINATED WITH FACTORY END BELL FITTINGS. ALL ELBOWS, BENDS AND TURNS TRANSITIONING TO GRADE SHALL BE INSTALLED USING PER MANUFACTURED 40-MIL PVC COATED GALVANIZED STEEL ELBOWS AND OFFSETS.
- E.ALL UNDERGROUND SERVICE CONDUITS SHALL BE SEALED TO COMPLY WITH CEC 230.8.
- F.PROVIDE 24" MINIMUM COVERAGE FOR UNDERGROUND CONDUITS, UNLESS OTHERWISE NOTED. THE EXCEPTION IS FOR PG&E SERVICE CONDUITS WHICH SHALL HAVE A 36" MINIMUM BURIAL DEPTH AND BE INSTALLED WITH A RED OXIDE CONCRETE CAP. MAINTAIN 12" MINIMUM SEPARATION BETWEEN THE POWER AND LOW VOLTAGE SYSTEM UNDERGROUND CONDUITS. TRENCHES SHALL ALL BE INSTALLED WITH A RED POLYETHYLENE WARNING RIBBON LABELED "ELECTRICAL", LOCATED 8" BELOW GRADE IN THE TRENCH.
- G.PROVIDE UNDERGROUND TRACER WHERE NON-METAL CONDUITS ARE INSTALLED.
- H.PROVIDE PARTEX IDENTIFICATION TAGS TO IDENTIFY UNDERGROUND CIRCUITS.
- I. ALL UNDERGROUND SPLICES SHALL BE MADE WATERPROOF BY PROVIDING WITH "SPLICE-KOTE" SPLICE KITS OR OTHER ACCEPTED METHODS. ALL FUSEHOLDERS SHALL BE WATERTIGHT.
- J. ALL UNDERGROUND RACEWAYS SHALL BE PROVIDED WITH A #8 AWG MINIMUM SIZE COPPER EQUIPMENT GROUNDING CONDUCTOR, WHETHER SHOWN ON PLAN OR NOT, UNLESS OTHERWISE
- K.THE CONTRACTOR SHALL BE RESPONSIBLE UNDER THIS CONTRACT TO REPAIR AND REPLACE ANY AND ALL DAMAGES TO EXISTING PCC WALKS, AC PAVING, UTILITIES, TREES, TURF, PLANTED AREAS, AND OTHER FACILITIES RESULTING FROM THIS PROJECT. WHEN CUTTING OR TRENCHING THROUGH EXISTING CONCRETE SIDEWALKS, DRIVEWAYS, AND WALKWAYS, THE CONTRACTOR SHALL BE REQUIRED TO COMPLETELY REPLACE ENTIRE SECTIONS OF CONCRETE PANELS FROM SCOREMARK TO SCOREMARK AFFECTED BY THE CONSTRUCTION WORK. ALL SIDEWALKS, DRIVEWAYS, AND WALKWAYS SHALL BE REPLACED TO MATCH ADJACENT CONDITION AND AS DIRECTED BY THE ARCHITECT.

GENERAL NOTES

ALL GENERAL NOTES SHOWN BELOW ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

- THESE GENERAL NOTES ARE INTENDED TO ASSIST THE CONTRACTOR IN THE EXECUTION OF THE ELECTRICAL WORK AND TO BE INCLUDED IN CONJUNCTION WITH THE CONTRACT DOCUMENT DRAWINGS AND SPECIFICATION REQUIREMENTS. SOME OF THE GENERAL NOTES ARE EXCERPTS FROM THE SPECIFICATION.
- 2. PROCURE PERMITS AND LICENSES REQUIRED, PAY ALL NECESSARY FEES AND ARRANGE FOR INSPECTIONS REQUIRED BY LOCAL CODES, ORDINANCES AND UTILITY COMPANIES.
- COORDINATE ALL ELECTRICAL SERVICES WITH THE RESPECTIVE UTILITY COMPANIES AND PROVIDE ALL TRENCHING, CONDUITS, WIRING, METER FACILITIES, AND OUTLETS REQUIRED BY THEM.
- WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY. DEFECTIVE EQUIPMENT OR EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING WITH THE ACCEPTANCE OF THE ARCHITECT.
- 5. INSTALL ALL EQUIPMENT, CONDUITS, OUTLETS, AND FIXTURES IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF ALL APPLICABLE CODES (CEC, STATE, COUNTY, AND CITY).
- DO NOT SCALE PLANS FOR FIXTURES, DEVICES, OR APPLIANCE LOCATIONS. USE FIGURED DIMENSIONS IF GIVEN OR CHECK MECHANICAL AND ARCHITECTURAL PLANS. ALSO REFER TO ACTUAL ON-SITE CONDITIONS.
- 7. ALL MATERIAL AND EQUIPMENT IS TO BE LISTED AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND CEC 110.3.
- 8. ALL ELECTRICAL DEVICES, EQUIPMENT, FIXTURES, CONDUITS AND WIRING SHOWN ON THESE PLANS ARE NEW, UNLESS OTHERWISE NOTED.
- 9. OUTLET BOXES INSTALLED IN FIRE WALLS SHALL BE ONE-PIECE STEEL AND INSTALLED IN SEPARATE (STAGGERED) STUD PENETRATIONS, MINIMUM 24 INCHES HORIZONTAL SEPARATION. FIRE WALLS SHALL BE MADE IN ACCORDANCE WITH CBC AND ELECTRICAL
- 10. THE FINAL LOCATION OF ALL OUTLETS SHALL BE VERIFIED WITH THE ARCHITECT AND/OR OWNER AT TIME OF CONSTRUCTION.
- 11. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE WEATHER-PROTECTED.
- 12. CONTRACTOR SHALL VERIFY THAT ALL LIGHTING FIXTURES, CEILING TRIMS, AND FRAMES ARE COMPATIBLE WITH CEILING SYSTEM INSTALLED.
- 13. CONTRACTOR SHALL COORDINATE LIGHT FIXTURE LOCATIONS AND INSTALLATIONS WITH THE MECHANICAL CONTRACTOR. MAINTAIN REQUIRED CLEARANCES (MINIMUM 3 INCHES, PER CEC 410.116) BETWEEN THE LIGHT FIXTURES AND MECHANICAL DUCTS OR EQUIPMENT FOR PROPER OPERATION, INSTALLATION AND/OR REMOVAL OF FIXTURES.
- 14. BEFORE SUBMITTING FOR ARCHITECT'S REVIEW AND PLACING ORDER FOR THE LIGHT FIXTURES, THE CONTRACTOR SHALL VERIFY THE VOLTAGE OF ALL THE LIGHTING FIXTURES TO MATCH THE VOLTAGE OF THE SERVICE PANEL, WHETHER THE VOLTAGE FOR THE LIGHT FIXTURES ARE SHOWN ON THE PLAN OR NOT.
- 15. PLACEMENT AND CIRCUITING OF EXIT SIGNS AND EGRESS LIGHTING SHALL COMPLY WITH CBC REQUIREMENTS.
- 16. ALL CONDUIT SHALL BE ROUTED CONCEALED UNLESS NOTED ON PLAN OR ACCEPTED BY THE ARCHITECT.
- 17. PROVIDE ALL NECESSARY SLEEVES AND INSERTS FOR ALL WORK PASSING THROUGH OR ATTACHING TO WALLS, FLOORS, OR CEILINGS.
- 18. ALL WIRING SHALL BE INSTALLED IN RIGID METALLIC CONDUIT, UNLESS OTHERWISE NOTED. CONDUITS INSTALLED CONCEALED IN WALL AND CEILING MAY BE EMT WITH STEEL COMPRESSION TYPE FITTINGS. PVC WHERE INSTALLED UNDERGROUND AND/OR UNDER SLAB. ALL EXPOSED CONDUITS SHALL BE RIGID STEEL CONDUITS WITH THREADED TYPE FITTINGS. INSTALL ALL CONDUITS IN ACCORDANCE WITH CEC STANDARDS OF INSTALLATION.
- 19. ELECTRICAL NON-METALLIC TUBING (ENT) AND MC CABLE ARE NOT PERMITTED TO BE USED FOR THIS PROJECT, NO EXCEPTIONS.
- 20. WHERE EXISTING CONDUITS, CONCEALED OR EXPOSED, AND (WIREMOLD) SURFACE RACEWAY IS NOT IN PLACE AS SHOWN ON PLANS, PROVIDE NEW CONDUITS AND (WIREMOLD) SURFACE RACEWAY FOR THE NEW WORK. VERIFY EXISTING CONDITION ON SITE AND PROVIDE ALL NECESSARY NEW MATERIAL, APPARATUS, AND WORK THAT IS REQUIRED TO BE INCLUDED IN THE BID PACKAGE.
- 21. CONDUCTORS, #8 AND LARGER, SHALL BE STRANDED COPPER WITH THNN/THWN INSULATION, UNLESS OTHERWISE NOTED.
- 22. PROVIDE WORKING CLEARANCE PER CEC 110.26 FOR SERVICE PANEL, SUBPANELS, MOTOR DISCONNECT SWITCHES, CONTROL SECTIONS, HVAC EQUIPMENT, APPLIANCES, ETC.

- 23. PROVIDE A WARNING LABEL (SIGN) CLEARLY VISIBLE TO QUALIFIED PERSONS TO COMPLY WITH NEC AND CEC 110.16 OF POTENTIAL ELECTRIC ARC FLASH HAZARDS AT SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS AND MOTOR CONTROL CENTERS THAT ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER CEC SECTION 110.24(A).
- 24. BUILDING SERVICE AND SUBPANELS TO COMPLY WITH CEC 110.9 AND 110.10 INTERRUPTING RATING AND BRACING. PROVIDE A.I.C. CALCULATIONS FOR SUBPANELS IF INTERRUPTING RATING TO BE USED IS LOWER THAN MAIN SERVICE RATING.
- 25. ALL APPLIANCES SHALL COMPLY WITH CEC ARTICLE 422. APPLIANCE CONTROL AND PROTECTION PER CEC 422-III; BRANCH CIRCUITS PER 422-II.
- 26. BUILDING EXPANSION JOINTS MAY OR MAY NOT BE INDICATED ON THE ELECTRICAL DRAWINGS, VERIFY THE LOCATIONS OF ALL APPLICABLE BUILDING EXPANSION JOINTS WITH THE ARCHITECTURAL DRAWINGS. WIRING METHODS ACROSS EXPANSIONS JOINTS SHALL INCLUDE USE OF FLEXIBLE FITTINGS OR OTHER DEVICES AS APPROPRIATE TO EACH APPLICATION. IN NO CASE SHALL CONDUIT CROSS SUCH A JOINT IN BUILDING CONSTRUCTION WITHOUT USE OF THE APPROPRIATE WIRING METHODS.
- 27. CONTRACTOR SHALL SIZE ALL THE INTERIOR AND EXTERIOR BUILDING PULL BOXES AND UNDERGROUND PULL BOXES PER CEC 314.16 AND COMPLY WITH CEC 314.28 FOR INSTALLATION OF RACEWAYS AND WIRING AS REQUIRED BY CODE, UNLESS OTHERWISE NOTED.
- 28. WHERE ACCESSIBILITY IS NOT AVAILABLE TO ELECTRICAL OUTLETS. DEVICES AND/OR EQUIPMENT, COORDINATE WITH THE ARCHITECT FOR PROVISIONS TO PROVIDE ACCESSIBILITY TO THEM.
- 29. CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL DRAWINGS AND PROVIDING ALL CONDUITS. CONTROL WIRING, AND POWER WIRING SHOWN ON THE MECHANICAL DRAWINGS THAT IS NOT SHOWN ON THE ELECTRICAL PLANS.
- 30. CONTRACTOR SHALL REFER TO THE MECHANICAL DRAWINGS AND COORDINATE FOR THE EQUIPMENT LOCATIONS. COORDINATE ROOF PENETRATION WITH THE MECHANICAL CONTRACTOR FOR MECHANICAL CONNECTIONS. ENTER ROOF MOUNTED UNITS THROUGH EQUIPMENT MOUNTING CURES WHERE POSSIBLE. VERIFY ON-SITE.
- 31. PROVIDE CONVENIENCE OUTLET WITHIN 25 FEET OF MECHANICAL EQUIPMENT PER U.M.C. WHERE LOCATED OUTSIDE, PROVIDE WEATHER PROOF AND GFCI CONVENIENCE OUTLET. SECURE ROOF MOUNTED OUTLET TO THE MECHANICAL EQUIPMENT. VERIFY LOCATION IN FIELD WITH THE MECHANICAL CONTRACTOR.
- 32. VERIFY SINGLE-POINT CONNECTIONS TO ROOF MOUNTED HVAC UNITS WITH MECHANICAL CONTRACTOR ON-SITE PRIOR TO ELECTRICAL ROUGH-IN. PROVIDE DUAL DISCONNECTS IF TWO-POINT CONNECTION IS REQUIRED, WHETHER SHOWN ON PLANS OR NOT.
- 33. SWITCH DEVICES CONTROLLING MECHANICAL EQUIPMENT SHALL BE OF SIZE AND TYPE REQUIRED AND SHALL BE SERVED WITH QUANTITY OF WIRES AS REQUIRED. REFER TO DIVISION 15 MECHANICAL PLANS AND SPECIFICATIONS.
- 34. COORDINATE THE HVAC EQUIPMENT FOR FUSES REQUIRED. WHERE FUSES ARE REQUIRED, VERIFY FUSE SIZE ON-SITE AND PROVIDE FOR HVAC EQUIPMENT PER UNIT NAMEPLATE SPECIFICATIONS.
- 35. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430-IX AND 440-II.
- 36. MOTOR STARTERS FOR HVAC EQUIPMENT ARE PROVIDED BY MECHANICAL CONTRACTOR AND CONNECTED BY ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.
- 37. ALL CONNECTIONS FROM THE DISCONNECT SWITCHES TO HVAC UNITS SHALL BE COPPER CONDUCTORS. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430-VII, 430-VIII,
- 38. CONTRACTOR TO VERIFY LOCATION AND HEIGHT OF ALL MECHANICAL OR FIXTURE EQUIPMENT OUTLETS WITH SUPPLIER PRIOR TO ANY ROUGH-IN WORK. PROVIDE ALL RUNS AND CONNECTIONS TO EQUIPMENT.
- 39. ALL TERMINATION PROVISIONS OF EQUIPMENT, INCLUDING CIRCUITS RATED 100 AMPERES OR LESS, SHALL BE RATED AT 60 DEGREE, CENTIGRADE PER CEC 110.14(c).
- 40. ALL LIGHT FIXTURES INSTALLED OVER FOOD HANDLING OR FOOD PREPARATION AREAS. OPEN FOOD STORAGE, AND UTENSIL WASHING AREAS SHALL BE OF SHATTERPROOF CONSTRUCTION OR SHALL BE PROTECTED WITH SHATTERPROOF SHIELDS AND SHALL BE READILY CLEANABLE.
- 41. ALL CONDUITS SHALL BE CONCEALED BELOW SLAB. IN WALLS AND/OR ABOVE CEILINGS EXCEPT IN ELECTRICAL ROOMS, MECHANICAL ROOMS, AND OTHER SIMILAR UTILITY ROOMS AS APPROVED BY THE ARCHITECT. NO CONDUIT SHALL BE EXPOSED ON EXTERIOR BUILDING SURFACES WITHOUT PRIOR APPROVAL FROM THE ARCHITECT.

SHEET NO. | SHEET TITLE

E1.1

42. PROVIDE A CODE SIZED GROUND CONDUCTOR IN ALL CONDUITS WHETHER INDICATED ON PLANS OR NOT.

| ELECTRICAL SYMBOL LEGEND

ELECTRICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

ELECTRICAL PANEL SCHEDULES

ELECTRICAL SITE PLAN

ELECTRICAL DETAILS

E7.2 | ELECTRICAL DETAILS

ELECTRICAL SHEET INDEX

ELECTRICAL ABBREVIATIONS NOTES AND SHEET INDEX

ELECTRICAL ABBREVIATIONS

	SYMBOL	DESCRIPTIONS
	A/AMP	AMPERES
	AC	ALTERNATING CURRENT
	AFF	ABOVE FINISHED FLOOR
	AFC	ABOVE FINISHED CEILING
	AFG	ABOVE FINISHED GRADE
	AIC	AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)
	С	CONDUIT
	ССТ	CIRCUIT
	CKT	CIRCUIT
	DC	DIRECT CURRENT
	(E)	EXISTING TO REMAIN
	EC	EMPTY CONDUIT
	EM	EMERGENCY
	EMT	ELECTRICAL METALLIC TUBING
	FACP	FIRE ALARM CONTROL PANEL
	FLA	FULL LOAD AMPS
	FLEX	FLEXIBLE METALLIC CONDUIT
	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	GND/G	GROUND
	HP	HORSEPOWER
	IG	ISOLATED GROUND
	J-BOX	JUNCTION BOX
	KVA	KILOVOLT-AMPS
	KW	KILOWATTS
	LTG	LIGHTING
	MCA	MINIMUM CIRCUIT AMPACITY
	MCB	MAIN CIRCUIT BREAKER
	MLO	MAIN LUGS ONLY
	MTD	MOUNTED
	(N)	NEW
	N	NEUTRAL CONDUCTOR (GROUNDED CIRCUIT CONDUCTOR)
	N.I.E.S.	NOT IN ELECTRICAL SCOPE OR SPECIFICATIONS NIGHT LIGHT
	NL PH/P	PHASE OR POLE
	PNL	PANELBOARD
	PVC	POLYVINYL CHLORIDE CONDUIT (SCHEDULE 40)
	(R)	RELOCATE/RELOCATED
	' '	
	RECEP	RECEPTACLE RIGID CALVANIZED STEEL CONDUIT
	RGSC	RIGID GALVANIZED STEEL CONDUIT UNSWITCHED
	UNO	UNLESS NOTED OTHERWISE
	V	VOLTAGE OR VOLTS
	W	WATTS
	WP	WEATHERPROOF
- 1	WPU	WEATHERPROOF WHILE IN USE
	(X)	REMOVE
	XFMR	TRANSFORMER
	_ · · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

- . ALL PERMANENT EQUIPMENT AND COMPONENTS. 2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
- 3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POLINDS OR HAS A CENTER OF MASS LOCATED 4 FEFT OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FFFT OR LESS ABOVE THE ADJACENT FLOOR OR ROOF
- LEVEL THAT DIRECTLY SUPPORT THE COMPONENT. B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM **BRACING NOTES**

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT ☐ 🕅 SPECIFIC NOTES AND DETAILS.

MP MD PP E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL \square \square \square (OPM#) #0043-13.

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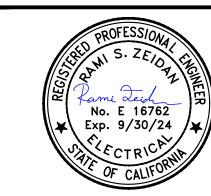
NGINEER:

MEP & FS / Sustainability / Cx 1209 Pleasant Grove Blvd. Roseville, CA 95678 p 916-771-0778 www.lpengineers.com ENGINEERS



Job #: 22-2021

Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tracv **High School Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

REVISIONS

DESCRIPTION

SCALE: RAWN: AS NOTE HECKED: PROJECT NO. 22-054 ESIGNED:

DATE:

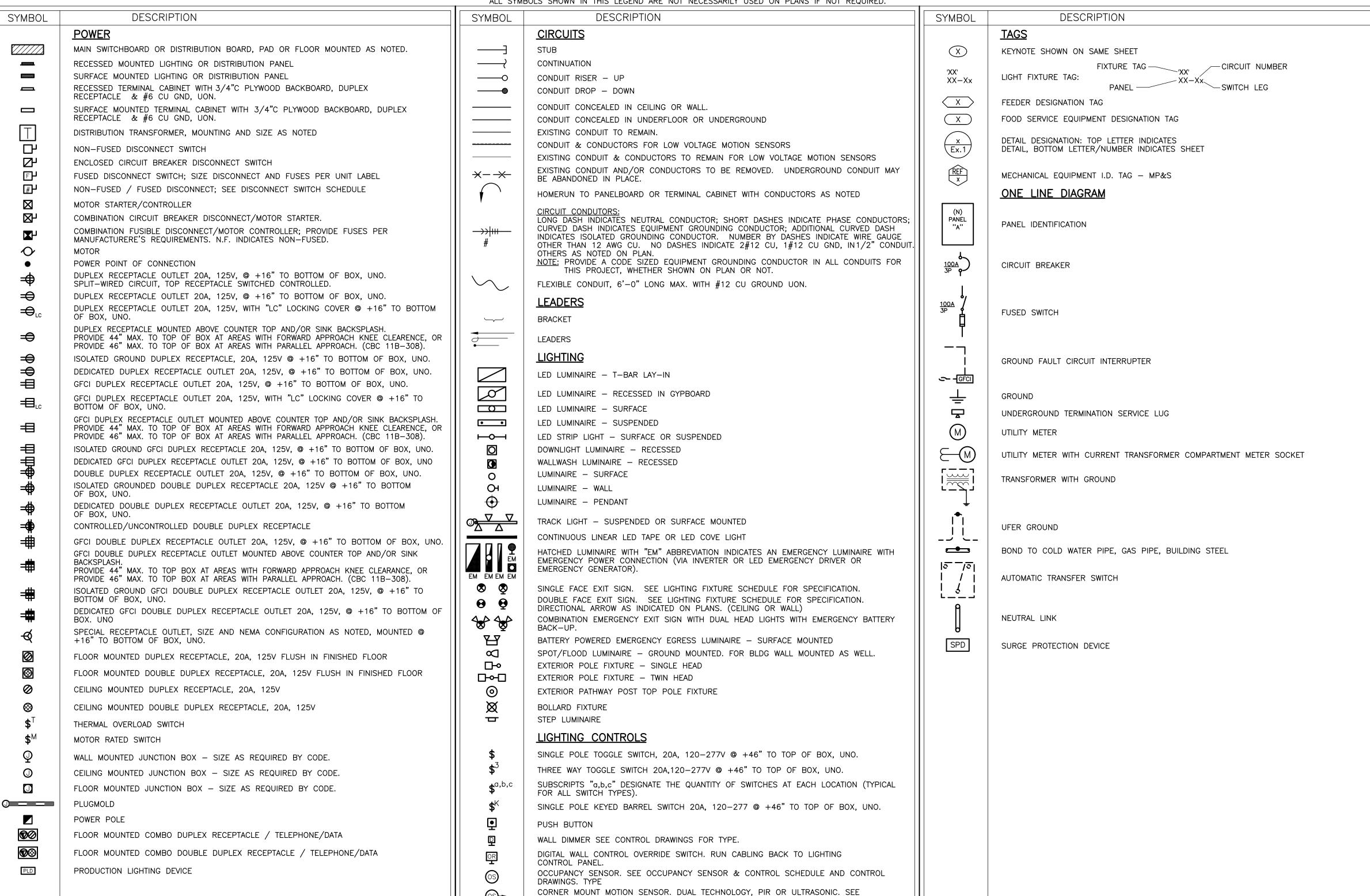
11-11-202

SUANCE:

BID SET

ELECTRICAL ABBREVIATIONS NOTES AND SHEET INDEX

HEET NO.



OCCUPANCY SENSOR & CONTROL SCHEDULE AND CONTROL DRAWING. TYPE

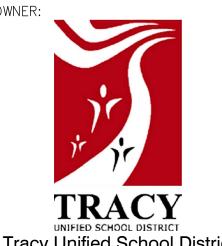
AND CONTROL DRAWINGS. TYPE

PHOTOCONTROL DAYLIGHT SENSOR. SEE OCCUPANCY SENSOR & CONTROL SCHEDULE

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Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tracy High School **Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

		REVI	SIONS		
NO.		DESC	RIPTION		
DRAW	/N:		SCALE:		
		BS		AS	NO

CHECKED: PROJECT NO. 22-054 ESIGNED: DATE: 11-11-202

SSUANCE:

BID SET

SHEET TITLE:

ELECTRICAL SYMBOL LEGEND

PART 1 _ GENERAL

1.01 SCOPE OF WORK

- A. FURNISH ALL NECESSARY LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS REQUIRED TO INSTALL A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM ACCORDING TO THE INTENT OF THIS SPECIFICATION WHETHER ITEMIZED OR NOT.
- B. EXAMINE THE MECHANICAL PLANS AND SPECIFICATIONS FOR MECHANICAL EQUIPMENT AND PROVIDE ALL STARTERS, CIRCUIT BREAKERS, SWITCHES, PUSH BUTTONS, AND APPURTENANCES, WHICH ARE NOT SPECIFIED TO BE WITH THE MECHANICAL EQUIPMENT. ERECT ALL ELECTRICAL EQUIPMENT NOT DEFINITELY STATED TO BE ERECTED BY OTHERS, FURNISH AND INSTALL CONDUIT, WIRE, AND CABLE AND MAKE CONNECTIONS REQUIRED TO PLACE ALL EQUIPMENT IN COMPLETE OPERATION.
- C. THE GENERAL EXTENT OF THE ELECTRICAL WORK INCLUDES, AMONG OTHERS, THE FURNISHING AND INSTALLING OF THE FOLLOWING ITEMS:
- 1. PRIMARY AND SECONDARY SERVICE FACILITIES INCLUDING TRANSFORMER PADS, PRIMARY CONDUIT AND TRENCHING, SECONDARY CONDUIT, TRENCHING AND CONDUCTORS, AND MAIN SWITCHBOARD INCLUDING FACILITIES FOR METERING, DISTRIBUTION PANELS, AND PANELBOARDS.
- 2. LIGHTING AND POWER INSTALLATION, INCLUDING FIXTURES, RECEPTACLE OUTLETS, SWITCHING, AND CIRCUITS AS INDICATED ON THE DRAWINGS.
- 3. ALL SUPPORTS, BASES, ANCHORS, SLEEVES, HANGERS AND THE LIKE, ALL ELECTRICAL WORK SHOWN AND/OR SPECIFIED, NOT PARTICULARLY MENTIONED ABOVE.
- 4. COMPLETE GROUNDING AND BONDING SYSTEMS.
- 5. TELEPHONE (MPOE) SERVICE ENTRANCE CONDUIT, BACKBOARDS, AND INTERCONNECTING CONDUIT.
- 6. CABLE TELEVISION SERVICE ENTRANCE CONDUIT, BACKBOARD OR CABINET, AND INTERCONNECTING CONDUIT.
- 7. THE CONTRACTOR WILL COORDINATE WITH THE LOCAL UTILITY COMPANIES FOR VERIFICATION OF THEIR REQUIREMENTS PRIOR TO BID CLOSURE AND PRIOR TO INSTALLATION. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY VOLTAGE, PHASE, CONDUIT SIZE; TYPE AND QUANTITY, WIRE SIZE; TYPE AND QUANTITY, AND THE LOCATION OF ALL EQUIPMENT REQUIRED FOR THIS PROJECT.
- 8. STANDBY EMERGENCY POWER GENERATOR, CONCRETE PAD, AND AUTO-TRANSFER SWITCH.
- 9. POWER CONNECTION TO HVAC AND PLUMBING EQUIPMENT.

1.02 RELATED WORK INCLUDED IN OTHER DIVISIONS

- A. FINISH PAINTING EXCEPT FACTORY APPLIED FINISHES AND REPAIR OF FACTORY FINISHES SHALL BE PROVIDED IN ACCORDANCE WITH APPROPRIATE SECTIONS OF THIS SPECIFICATION. COORDINATE "PAINTING" REQUIREMENTS OF THIS DIVISION WITH OTHER TRADES AS REQUIRED TO ASSURE TIMELY AND SATISFACTORY COMPLETION OF REQUIRED WORK. IN FINISHED AREAS, ALL EXPOSED RACEWAY, BOXES, GALVANIZED STEEL BOX COVERS (WHERE ALLOWED), AND OTHER ELECTRICAL "STRUCTURE" SHALL BE FINISHED TO MATCH ADJACENT STRUCTURES. VERIFY THAT ALL RACEWAY OPENINGS ARE CLOSED AND BOX COVERS ARE IN PLACE PRIOR TO FINISHING WORK DONE BY OTHERS.
- B. EXAMINE THE DRAWINGS AND SPECIFICATIONS FOR MECHANICAL EQUIPMENT AND PROVIDE ELECTRICAL INSTALLATION FOR HEATING, VENTILATION, AND AIR CONDITIONING EQUIPMENT, MOTORS, PUMPS, ASSOCIATED MOTOR STARTERS, AND CONTROLS AS DESCRIBED IN 1.15 EQUIPMENT IDENTIFICATION.
- C. EXAMINE THE DRAWINGS AND SPECIFICATIONS OF OTHER TRADES FOR ELECTRICAL EQUIPMENT WHICH MAY NOT BE SHOWN ON THE PLANS TO INCLUDE AND PROVIDE ELECTRICAL INSTALLATIONS AS DESCRIBED IN OTHER TRADES WORK, I.E. MODULAR OFFICE SYSTEM FURNITURE, INFORMATION TECHNOLOGY (I.T.) SYSTEM EQUIPMENT, AUDIO/VIDEO SYSTEMS EQUIPMENT. ETC.
- D. EXAMINE THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ELECTRICAL APPLIANCES AND EQUIPMENT WHICH MAY NOT BE SHOWN ON THE PLANS TO INCLUDE AND PROVIDE ELECTRICAL INSTALLATIONS AS DESCRIBED IN THE ARCHITECTURAL DIVISION OF WORK.
- E. EXAMINE THE ARCHITECTURAL DRAWINGS AND PROVIDE ALL CONSTRUCTION NECESSARY TO MAINTAIN THE INTEGRITY OF THE FIRE RATED BARRIERS.
- F. EXAMINE THE ARCHITECTURAL DRAWINGS AND COORDINATE WITH THE ARCHITECT TO PROVIDE ACCESS DOORS, WHETHER SHOWN ON DRAWINGS OR NOT, WHERE FLOORS, WALLS, OR CEILING MUST BE PENETRATED FOR ACCESS TO ELECTRICAL EQUIPMENT, OUTLET BOXES, DEVICES, ETC., AND AS SPECIFIED IN THIS SPECIFICATION.
- G. PROVIDE AND INSTALL, AS PART OF THE WORK DESCRIBED IN THIS DIVISION, ALL POWER AND CONTROL WIRING FED FROM A SOURCE OF 30 VOLTS OR MORE (I.E. ALL WIRING EXCEPT TEMPERATURE CONTROL WIRING) FOR MECHANICAL EQUIPMENT DESCRIBED IN 1.15 EQUIPMENT IDENTIFICATION.

1.03 APPLICATION OF OTHER DIVISIONS

A. WHERE CARPENTRY, MASONRY, CONCRETE WORK, PAINTING, ETC., IS REQUIRED IN THE INSTALLATION OF EQUIPMENT SPECIFIED UNDER THIS DIVISION, THE WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE DIVISION OF THESE SPECIFICATIONS. THIS WORK COULD INCLUDE FOR EXAMPLE: WORK ASSOCIATED WITH PANELBOARD INSTALLATION, EQUIPMENT PADS OR BASES, SUPPORT STRUCTURES, ETC.

1.04 DRAWINGS AND SPECIFICATIONS

- A. THE INFORMATION PRESENTED IN THESE SPECIFICATIONS AND ON THE DRAWINGS IS INTENDED TO DESCRIBE THE UTILITARIAN AND PHYSICAL ASPECTS OF THE SYSTEMS SHOWN AS WELL AS THE QUALITY OF THE ENTIRE INSTALLATION. ALL INFORMATION IS AS COMPLETE AND THOROUGH AS POSSIBLE, BUT EVERY CONDITION OR SITUATION CANNOT BE ANTICIPATED. EXACT LOCATIONS, DIMENSIONS, ELEVATIONS, ETC. MUST BE DETERMINED "ON THE JOB" WITH CAREFUL ATTENTION TO THE "INTENT" OF THE DRAWINGS AND SPECIFICATIONS.
- B. THE ABOVE PARAGRAPH SHALL NOT BE CONSTRUED AS TO ALLOW SIGNIFICANT DEVIATION FROM EITHER THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR APPROVAL OF THE ARCHITECT, BUT MINOR CHANGES IN CONDUIT ROUTING OR EQUIPMENT LOCATIONS MAY BE REQUIRED OR DESIRED DUE TO SPECIFIC CONDITIONS ENCOUNTERED. THIS WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE SPECIFICATIONS AND NO "EXTRA CHARGES" ARE TO BE CREATED FOR ANY UNANTICIPATED LABOR OR MATERIAL.
- C. ANY ERROR OR OMISSIONS OF DETAIL IN EITHER THE DRAWINGS OR THE SPECIFICATIONS SHALL NOT RELIEVE THE CONTRACTOR FROM CORRECTLY INSTALLING ALL MATERIALS NECESSARY FOR COMPLETE AND OPERATING ELECTRICAL SYSTEMS.
- D. CONTRACTOR SHALL INSPECT THE SITE AND VERIFY ALL MEASUREMENTS AND CONDITIONS. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF DIFFERENCES BETWEEN WORK SHOWN ON THE DRAWINGS AND MEASUREMENTS AT THE SITE.
- E. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE, BUT THE LOCATIONS OF DEVICES, EQUIPMENT, OUTLETS, AND LIGHTING FIXTURES ARE SHOWN APPROXIMATELY WHERE INSTALLATIONS ARE INTENDED. ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND OTHER DRAWINGS SHALL BE EXAMINED, NOTING ALL CONDITIONS THAT MAY AFFECT THIS WORK. REPORT CONFLICTING CONDITIONS TO THE ARCHITECT/ENGINEER FOR ADJUSTMENT BEFORE PROCEEDING WITH THE WORK. SHOULD THE CONTRACTOR PROCEED WITH WORK WITHOUT REPORTING THE MATTER, HE DOES SO ON HIS OWN RESPONSIBILITY AND SHALL ALTER WORK IF DIRECTED BY THE ARCHITECT/ENGINEER AT HIS OWN EXPENSE.
- EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND MANUFACTURER'S DRAWINGS FOR VARIOUS EQUIPMENT IN ORDER TO DETERMINE EXACT ROUTING AND FINAL TERMINATIONS FOR ALL CONDUITS AND CABLES. CONDUITS SHALL BE STUBBED UP AS NEAR AS POSSIBLE TO EQUIPMENT ENCLOSURE.
- G. ALL EQUIPMENT SHALL BE LOCATED AND INSTALLED SO THAT IT WILL BE READILY ACCESSIBLE FOR OPERATION AND MAINTENANCE. THE OWNER RESERVES THE RIGHT TO REQUIRE MINOR CHANGES IN LOCATION OF OUTLETS OR EQUIPMENT, PRIOR TO ROUGH IN WITHOUT INCURRING ANY ADDITIONAL COST OR CHANGES.
- H. IF SIGNIFICANT DEPARTURES FROM THE DRAWINGS OR SPECIFICATIONS ARE CONSIDERED NECESSARY BY THE CONTRACTOR, DETAILS OF THE CHANGES AND THE REASONS THEREFORE SHALL BE SUBMITTED TO THE ARCHITECT WITHIN THIRTY DAYS AFTER AWARD OF CONTRACT. PRIOR WRITTEN ACCEPTANCE OF THE ARCHITECT IS REQUIRED FOR THESE DEPARTURES.
- I. CLARIFICATION OF PLANS AND SPECIFICATIONS FOR THE PURPOSE OF FACILITATING CONSTRUCTION, BUT NOT INVOLVING ADDITIONAL LABOR AND MATERIALS, MAY BE PREPARED DURING CONSTRUCTION BY THE ARCHITECT/ENGINEER. SAID REVISED PLANS AND SPECIFICATIONS SHALL BECOME A PART OF THE CONTRACT. THE CONTRACTOR SHALL CONFORM TO THE REVISED PLANS AND SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER.
- J. WHERE EXISTING UNDERGROUND OR OTHERWISE CONCEALED FACILITIES ARE INDICATED ON THE DRAWINGS, THESE ARE LOCATED AS WELL AS CAN BE DETERMINED FROM AVAILABLE INFORMATION. THE CONTRACTOR IS REQUIRED TO VERIFY ACTUAL LOCATIONS AS NECESSARY FOR THIS CONSTRUCTION.

1.05 CODES AND STANDARDS

- A. ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
- 1. 2019 CALIFORNIA ELECTRICAL CODE (CEC).
- 2. TITLE 24 _ STATE OF CALIFORNIA ADMINISTRATIVE CODE
- 3. UNIFORM BUILDING CODE _ CURRENT EDITION
- 4. CITY OR COUNTY ELECTRICAL CODE AS APPLICABLE
- 5. APPLICABLE REGULATIONS OF LOCAL UTILITY COMPANIES
- 6. E.U.S.E.R.C. STANDARDS
- 7. ANY ADDITIONAL CODES EFFECTIVE AT THE JOB SITE
- B. FURNISH WITHOUT EXTRA CHARGE ANY ADDITIONAL MATERIAL AND LABOR WHICH MAY BE REQUIRED FOR COMPLIANCE WITH THESE LAWS, RULES, AND REGULATIONS, EVEN THOUGH THE WORK IS NOT MENTIONED IN THESE PARTICULAR SPECIFICATIONS.
- C. APPLY AND PAY FOR ALL PERMITS REQUIRED BY ANY OF THE LEGALLY CONSTITUTED PUBLIC AUTHORITIES FOR THE INSTALLATION OR CONSTRUCTION OF THE WORK INCLUDED UNDER THIS SPECIFICATION.
- D. ARRANGE AND PAY FOR ANY INSPECTIONS OR EXAMINATIONS SO REQUIRED AND DELIVER CERTIFICATES OF ALL SUCH INSPECTIONS TO THE OWNER. WHEN THESE SPECIFICATIONS CALL FOR MATERIALS OR CONSTRUCTION OF A BETTER QUALITY OR LARGER SIZES THAN REQUIRED BY THE ABOVE MENTIONED RULES AND REGULATIONS, THE PROVISIONS OF THE SPECIFICATIONS SHALL TAKE PRECEDENCE.

1.06 EXAMINATION OF THE SITE

A. THE CONTRACTOR IS REQUIRED TO VISIT THE SITE OF CONSTRUCTION PRIOR TO BID TO DETERMINE EXISTING CONDITIONS AND THEIR EFFECT UPON THE WORK HE WILL BE REQUIRED TO PERFORM. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ANY EXTRA EXPENSES INCURRED BY FAILURE TO DETECT AND EVALUATE ALL EXISTING CONDITIONS THAT WILL AFFECT HIS WORK TO BE INCLUDED IN THE BID TO ACCOMPLISH THIS CONTRACT DOCUMENT'S GOAL.

1.07 COORDINATION WITH OTHER TRADES

A. EXAMINE THE ELECTRICAL DRAWINGS AND REFER TO THE DRAWINGS AND SPECIFICATIONS DESCRIBING OTHER WORK TO BE ACCOMPLISHED. VERIFY AND COORDINATE PRIOR TO BID. CONTINUE TO COORDINATE WORK PLANNING AND ALL WORK IN THE FIELD TO AVOID CONFLICTS, ERRORS, AND/OR DELAYS. NO COMPENSATION WILL BE ALLOWED FOR EXTRA WORK NECESSITATED BY LACK OF COORDINATION.

1.08 STRUCTURAL REQUIREMENTS

- A. SECURE ALL ANCHORS FOR ELECTRICAL EQUIPMENT IN A MANNER, WHICH WILL NOT DECREASE THE STRUCTURAL VALUE OF ANY STRUCTURE TO AN UNSAFE LEVEL. INSTALL ALL EQUIPMENT, FIXTURES, ETC. TO RESIST SEISMIC MOVEMENTS. INFORM THE ARCHITECT IN ADVANCE AND PROVIDE DRAWINGS OF ANY PROPOSED MODIFICATIONS TO THE STRUCTURE THAT INVOLVES CUTTING OR PATCHING OF CONCRETE, MASONRY, STEEL, OR WOOD IN THIS PROJECT.
- 1.09 MANUFACTURER'S INSTRUCTIONS
- A. FOLLOW THE MANUFACTURER'S INSTRUCTIONS WHEN SPECIFIC INSTALLATION OR CONNECTION DETAILS ARE NOT INDICATED OR SPECIFIED ON THE CONTRACT DOCUMENTS.
- B. NOTIFY THE ARCHITECT/ENGINEER OF CONFLICTS BETWEEN THE MANUFACTURER'S INSTRUCTIONS AND INSTALLATION OR CONNECTION DETAILS PRIOR TO THE INSTALLATION OF

1.10 SERVICE AND METERING

- A. NEW UNDERGROUND FACILITIES (CONDUIT) SHALL BE PROVIDED FOR THE POWER COMPANY'S PRIMARY LINES.
- B. NEW UNDERGROUND FACILITIES (CONDUIT AND CONDUCTORS) SHALL BE PROVIDED FOR THE POWER COMPANY'S SECONDARY LINES.
- C. PROVIDE TRANSFORMER PADS AND SERVICE AS SHOWN ON PLANS.
- D. PAY ALL COSTS AND POWER COMPANY CHARGES.
- E. POWER IS PROVIDED BY PG&E.
- F. COORDINATE ALL REQUIREMENTS WITH THE UTILITY COMPANY PRIOR TO BID.

1.11 INSPECTION

- A. COOPERATE WITH THE OWNER AND PROVIDE ASSISTANCE AT ALL TIMES FOR THE INSPECTION OF THE ELECTRICAL WORK. REMOVE COVERS, OPERATE MACHINERY, OR PERFORM ANY REASONABLE WORK, WHICH IN THE OPINION OF THE OWNER, WILL BE NECESSARY TO DETERMINE THE QUALITY OR ADEQUACY OF THE WORK.
- B. IF ANY MATERIAL DOES NOT CONFORM TO THESE SPECIFICATIONS, REMOVE THE MATERIALS FROM THE PREMISES, WITHIN THREE DAYS AFTER BEING NOTIFIED BY THE OWNER.
- C. WORK SHALL NOT BE CLOSED IN OR COVERED BEFORE INSPECTION AND APPROVAL BY THE OWNER.

1.12 QUALITY OF MATERIALS

- A. ALL ELECTRICAL MATERIALS USED ON THIS PROJECT SHALL BE NEW AND FREE FROM DEFECTS.
- B. ALL ELECTRICAL MATERIALS USED ON THIS PROJECT SHALL CONFORM WHERE APPLICABLE, TO THE FOLLOWING STANDARDS, UNLESS OTHERWISE NOTED:
- 1. NEMA _ NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
- NEMA _ NATIONAL ELECTRICAL MANUFACTURERS ASSOC
 ANSI _ AMERICAN NATIONAL STANDARDS INSTITUTE
- 3. UL _ UNDERWRITERS LABORATORIES, INC.
- C. EACH TYPE OF MATERIAL SHALL BE OF THE SAME MANUFACTURER AND QUALITY THROUGHOUT THE WORK.

1.13 SUBMITTAL & SHOP DRAWINGS

- A. SHOP DRAWINGS AND SUPPLEMENTAL DATA WHERE CALLED FOR, SHALL BE PREPARED AND SUBMITTED AS PER GENERAL CONDITIONS. FINAL CORRECTED COPIES OF SCHEDULES AND SHOP DRAWINGS OR SUPPLEMENTAL DATA TO ARCHITECT FOR REVIEW, SHALL BE SUCH AS TO PROVIDE ONE (1) FOR ARCHITECT'S FILES, ONE (1) FOR ELECTRICAL ENGINEER'S FILES, TWO (2) FOR THE OWNER, ONE (1) TO CONTRACTOR'S JOB FILES, AND SUCH ADDITIONAL COPIES AS CONTRACTOR MAY DESIRE FOR HIS OWN OFFICE FILES AND/OR FOR DISTRIBUTION BY HIM TO SUBCONTRACTORS OR VENDORS. EXCEPTIONS SHALL BE AS NOTED IN THE DIMSION 1 SPECIFICATION SECTIONS.
- B. SHOP DRAWINGS AND SUPPLEMENTAL DATA ARE REQUIRED UNLESS SPECIFICALLY NOT REQUESTED BY THE ENGINEER. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL ELECTRICAL EQUIPMENT PERTAINING TO JOB. (NOT LIMITED TO ELECTRICAL EQUIPMENT, LIGHTS, RECEPTACLES, BOXES, ENCLOSURES, CONDUIT, WIRE, ETC.)
- C. THE SHOP DRAWINGS AND SUPPLEMENTAL DATA SHOWN CALLED FOR SHALL BE SUBMITTED AS THE INSTRUMENTS OF THE CONTRACTOR, EVEN THOUGH THEY MAY HAVE BEEN PREPARED BY A SUBCONTRACTOR, SUPPLIER, DEALER, MANUFACTURER, OR BY ANY OTHER PERSON, FIRM OR ORGANIZATION. PRIOR TO SUBMISSION, THE CONTRACTOR SHALL UNDERTAKE HIS OWN REVIEW AND STAMP WITH HIS ACCEPTANCE, THEN SUBMIT TO THE ENGINEER FOR HIS REVIEW. BY ACCEPTING AND SUBMITTING SHOP DRAWINGS AND SUPPLEMENTAL DATA, THE CONTRACTOR REPRESENTS THAT HE HAS DETERMINED AND VERIFIED ALL FIELD MEASUREMENTS, THE PHYSICAL CONSTRUCTION, THE QUALITY OF MATERIALS, THE APPLICABILITY OF CATALOG NUMBERS, AND SIMILAR DATA, OR WILL DO SO, AND THAT HE HAS CHECKED AND COORDINATED EACH SHOP DRAWINGS WITH THE REQUIREMENTS OF THE TRADES SHALL BE RESOLVED BY THE CONTRACTOR IN THE SHOP DRAWINGS, IF POSSIBLE, BUT IN ANY EVENT PRIOR TO THE ACTUAL CONSTRUCTION.
- D. ALL SHOP DRAWINGS SHALL BE DRAWN ACCURATELY ON PAPER SUITABLE FOR DUPLICATE COPYING BY BLACK OR BLUE LINE PRINTING PROCESSES OR XEROX.
- E. SUPPLEMENTAL DATA SHALL INCLUDE INFORMATION AS NOTED IN THE SPECIFICATION PARAGRAPHS REQUIRING THEM, OR AS REQUESTED BY THE ARCHITECT.
- F. THE ENGINEER WILL REVIEW SHOP DRAWINGS AND SUPPLEMENTAL DATA SUBMITTED BY THE CONTRACTOR ONLY FOR GENERAL DESIGN CONFORMANCE WITH THE CONCEPT OF THE PROJECT AND COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS.
- G. IF MORE THAN ONE (1) SUBMISSION OF SHOP DRAWINGS OR SUPPLEMENTAL DATA IS REQUIRED FOR ANY GIVEN ITEM TO MEET THE PROJECT SPECIFICATIONS, THE COST OF REVIEWING THESE ADDITIONAL SUBMISSIONS SHALL BE CHARGED DIRECTLY AGAINST THE CONTRACTOR AND THE OWNER WILL WITHHOLD THE FUNDS NECESSARY TO COVER THESE COSTS
- H. SHOP DRAWINGS, IF REQUESTED, MUST BE SUBMITTED TO AND FAVORABLY REVIEWED BY THE ARCHITECT AND/OR ENGINEER BEFORE BEING USED BY THE CONTRACTOR ON THE
- I. SHOP DRAWINGS DEADLINE: IN ADDITION TO REQUIREMENTS AS ESTABLISHED IN DIVISION 1 OF THE GENERAL CONDITIONS, THE CONTRACTOR SHALL, WITHIN 35 CALENDAR DAYS AFTER THE NOTICE TO PROCEED OF THE CONTRACT, SUBMIT TO THE ARCHITECT FOR APPROVAL THE SHOP DRAWINGS FOR EQUIPMENT AND/OR SPECIALTY ITEMS AS LISTED IN EACH DIVISION OF WORK. THE SHOP DRAWINGS SHALL BE SUBMITTED IN ADDITION TO THE LIST OF MATERIALS REQUIRED BY THE "SPECIFIED ITEMS _ SUBSTITUTES" PARAGRAPH.
- J. SHOP DRAWINGS DELINEATION: THE SHOP DRAWINGS SHALL BE DRAWN TO SCALE AND SHALL BE COMPLETELY DIMENSIONED, BRINGING THE PLAN TOGETHER WITH SUCH SECTIONS AS ARE NECESSARY TO CLEARLY SHOW CONSTRUCTION DETAIL.
- K. RESPONSIBILITY: THESE SHOP DRAWINGS AND ALL SUPPORTING DATA, CATALOGS, ETC., SHALL BE PREPARED BY THE CONTRACTOR OR HIS SUPPLIERS, BUT SHALL BE SUBMITTED AS THE INSTRUMENTS OF THE CONTRACTOR. THEREFORE, THE CONTRACTOR SHALL CHECK THE DRAWINGS OF HIS SUPPLIERS AS WELL AS HIS OWN DRAWINGS BEFORE SUBMITTING THEM TO THE ARCHITECT. IN PARTICULAR, THE CONTRACTOR SHALL ASCERTAIN THAT THE SHOP DRAWINGS MEET ALL REQUIREMENTS OF THE FINAL DESIGN DRAWINGS AND SPECIFICATIONS AND ALSO CONFORM TO THE STRUCTURAL AND SPACE CONDITIONS. EACH SHOP DRAWING SUBMITTED FOR APPROVAL SHALL BEAR A STAMP CERTIFYING THAT IT HAS BEEN CHECKED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATIONS. IF SUCH SHOP DRAWINGS SHOW VARIATIONS FROM CONTRACT DOCUMENTS, WHETHER BECAUSE OF STANDARD SHOP PRACTICE OR OTHER REASONS, THE CONTRACTOR SHALL MAKE SPECIAL MENTION THEREOF IN HIS LETTER TRANSMITTAL. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR OBSERVING THE NEED FOR AND MAKING ANY CHANGES IN THE ARRANGEMENT OF PIPING, CONNECTIONS, WIRING, MANNER OF INSTALLATION ETC., WHICH MAY BE REQUIRED BY THE EQUIPMENT HE PROPOSES TO SUPPLY BOTH AS IT PERTAINS TO HIS OWN WORK AND ANY WORK AFFECTED UNDER OTHER PARTS, HEADINGS, OR DIVISIONS OF DRAWINGS, AND SPECIFICATIONS.
- L. IDENTIFICATION: SHOP DRAWINGS SHALL BE ENTITLED WITH THE NAME OF THE PROJECT ON EACH SHEET AND SHALL OTHERWISE BE IDENTIFIED BY LISTING THE PARTICULAR DIVISION, SECTION, ARTICLE OR REFERENCE OF THE WORK PERTAINING. SUBMIT DIFFERENT ITEMS ON SEPARATE SHEETS. ALL SUBMITTALS SHALL BE NUMBERED SERIALLY.
- M. MANNER: FURNISH FOR ARCHITECT'S APPROVAL SEPARATE SHEETS OF SUBMITTAL OF EACH SPECIALTY ITEM IN THE FOLLOWING MANNER:
- 1. CATALOG CUTS SHALL BE PHOTOCOPIED OR REPRODUCED IN SOME OTHER ACCEPTABLE MANNER AND SUBMITTED SEVEN (7) COPIES ON ONE SIDE ONLY OF AN 8 ½" X 11" SHEET, NOTING ONLY THE ITEMS IN QUESTION, TOGETHER WITH THE DESCRIPTIVE (SPECIFICATION) DATA COMPLETE. DRAWINGS SHALL BE SUBMITTED IN OZALID TRANSPARENCY FORM.
- 2. EACH SHEET SHALL BE IDENTIFIED WITH THE DIVISION, SECTION, ARTICLE OR REFERENCE IN THE CONTACT DOCUMENTS, WHICH COVERS THE ITEM SUBMITTED FOR APPROVAL.
- 3. EACH SHEET SHALL BE IDENTIFIED WITH THE PROJECT NAME AND THE ARCHITECT.
- 4. EACH SHEET SHALL BEAR THE CONTRACTOR'S STAMP AND SIGNATURE OF APPROVAL.

1.14 SPECIFIED ITEMS _ SUBSTITUTES

- A. WHEREVER CATALOG NUMBERS AND SPECIFIC BRANDS OR TRADE NAMES FOLLOWED BY THE DESIGNATION "OR EQUAL" ARE USED IN CONJUNCTION WITH A DESIGNATED MATERIAL, PRODUCT, THICKNESS, OR SERVICE MENTIONED IN THIS SPECIFICATION, THEY ARE USED TO ESTABLISH THE STANDARDS OF QUALITY, UTILITY AND APPEARANCE REQUIRED. SUBSTITUTIONS, WHICH ARE EQUAL IN QUALITY, UTILITY, AND APPEARANCE TO THOSE SPECIFIED, WILL BE APPROVED, SUBJECT TO THE FOLLOWING PROVISIONS: ALL SUBSTITUTIONS MUST BE APPROVED BY THE ARCHITECT AND/OR ENGINEER IN WRITING. FOR THIS PURPOSE, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT, WITHIN 30_CALENDAR DAYS AFTER THE DATE OF COMMENCEMENT SPECIFIED IN THE NOTICE TO PROCEED, A TYPEWRITTEN LIST CONTAINING A DESCRIPTION OF EACH PROPOSED SUBSTITUTE ITEM OR MATERIAL. THE ARCHITECT MAY INCREASE THE SUBMITTAL PERIOD BEYOND 30 CALENDAR DAYS IF THE SCHEDULE ALLOWS. SUFFICIENT DATA, DRAWINGS, SAMPLES, LITERATURE OR OTHER DETAILED INFORMATION THAT WILL DEMONSTRATE TO THE ARCHITECT THAT THE PROPOSED SUBSTITUTE IS EQUAL IN QUALITY, UTILITY, AND APPEARANCE TO THE MATERIAL SPECIFIED SHALL BE APPENDED TO THIS LIST. THE ARCHITECT WILL APPROVE, IN WRITING, SUCH PROPOSED SUBSTITUTION WHICH AFFECT OTHER PARTS OF THE CONTRACTOR'S OWN WORK OR THE WORK OF OTHERS.
- B. FAILURE OF THE CONTRACTOR TO SUBMIT PROPOSED SUBSTITUTIONS FOR APPROVAL IN THE MANNER DESCRIBED ABOVE AND WITHIN THE TIME PRESCRIBED SHALL BE SUFFICIENT CAUSE FOR DISAPPROVAL BY THE ENGINEER OF ANY SUBSTITUTIONS OTHERWISE PROPOSED.
- C. WHEREVER CATALOG NUMBERS AND SPECIFIC BRANDS OR TRADE NAMES NOT FOLLOWED BY THE DESIGNATION "OR EQUAL" MATERIAL, PRODUCT, THING OR SERVICE MENTIONED IN THESE SPECIFICATIONS, NO SUBSTITUTIONS WILL BE ACCEPTED FOR APPROVAL.
- D. WHEREVER MORE THAN ONE MANUFACTURER'S PRODUCT IS SPECIFIED, THE FIRST_NAME PRODUCT IS THE BASIS FOR THE PROJECT DESIGN AND THE USE OF ALTERNATIVE NAME MANUFACTURER'S PRODUCTS OR SUBSTITUTES MAY REQUIRE MODIFICATIONS IN THE PROJECT DESIGN AND CONSTRUCTION. IF SUCH ALTERNATIVES ARE PROPOSED BY THE CONTRACTOR AND ARE FAVORABLY REVIEWED BY THE ENGINEER THE CONTRACTOR SHALL ASSUME COSTS REQUIRED TO MAKE NECESSARY REVISIONS AND MODIFICATIONS INCLUDING ADDITIONAL COSTS TO THE OWNER FOR EVALUATIONS OF MODIFICATIONS OF THE PROJECT DESIGN SUBMITTED BY THE CONTRACTOR TO THE ARCHITECT.
- E. WHEN MATERIALS ARE SPECIFIED BY THE FIRST MANUFACTURER'S NAME, AND PRODUCT NUMBER, SECOND MANUFACTURER'S NAME, OR EQUAL, THE SECOND MANUFACTURER'S PRODUCT SHALL BE SUBMITTED IN ACCORDANCE WITH THE ABOVE PARAGRAPH.
- F. IF THE ENGINEER IN THIS REVIEW OF THE LIST OF MATERIALS AND EQUIPMENT REQUIRES REVISIONS OR CORRECTIONS TO BE MADE OR SHOP DRAWINGS AND/OR SUPPLEMENTAL DATA TO BE SUBMITTED, THE CONTRACTOR SHALL PROMPTLY DO SO. IF ANY PROPOSED MATERIAL IS JUDGED BY THE ENGINEER TO BE UNACCEPTABLE, THE SPECIFIED ITEM SHALL BE PROVIDED; FURTHER SUBMISSIONS WILL NOT BE ALLOWED, UNLESS DIRECTED BY THE ENGINEER.
- G. PHYSICAL SAMPLES MAY BE REQUIRED. IF TESTS FOR THE DETERMINATION OF EQUALITY AND UTILITY ARE REQUIRED BY THE ENGINEER THEY SHALL BE MADE BY A TESTING LABORATORY, WITH ACCEPTANCE OF THE TEST PROCEDURE FIRST GIVEN BY THE ENGINEER, AND AT THE EXPENSE OF THE CONTRACTOR.
- H. IN REVIEW OF THE DATA SUBMITTED IN SUPPORT OF SUBSTITUTIONS, THE ENGINEER WILL USE FOR PURPOSES OF COMPARISON ALL OF THE CHARACTERISTICS OF THE SPECIFIED ITEM AS THEY APPEAR IN THE MANUFACTURER'S PUBLISHED DATA EVEN THOUGH ALL OF THE CHARACTERISTICS OF THE SPECIFIED ITEM MAY NOT HAVE BEEN PARTICULARLY MENTIONED IN THE MANUFACTURER'S PUBLISHED DATA. IF MORE THAN TWO SUBMISSIONS OF DATA ARE REQUIRED, THE COST OF REVIEWING THE DATA GOES AGAINST THE CONTRACTOR, AND THE OWNER WILL WITHHOLD THE FUNDS NECESSARY TO COVER THESE COSTS. ONLY ONE (1) SUCH REQUEST MAY BE SUBMITTED. THE ENGINEER'S REJECTION OF ANY SUBSTITUTE SHALL AUTOMATICALLY REQUIRE THE CONTRACTOR TO FURNISH THE SPECIFIED ITEM WITHOUT FURTHER DISCUSSION OR DELAY.

1.15 EQUIPMENT IDENTIFICATION

- A. THE MAIN SWITCHBOARD, AND ALL PANELBOARDS, DISCONNECT SWITCHES, TRANSFORMERS, BOXES, ETC., SHALL BE PROPERLY IDENTIFIED WITH A DESCRIPTIVE NAMEPLATE.

 NAMEPLATES SHALL BE MADE OF 1/16 INCH LAMINATED PLASTIC WITH BLACK BACKGROUND AND WHITE LETTERS. SIZE OF LETTERS SHALL BE 1/4 INCH HIGH. LETTERS

 SHALL BE MACHINE ENGRAVED. ALL NAMEPLATES SHALL BE SCREW MOUNTED WITH OVAL HEAD MACHINE SCREWS TAPPED INTO FRONT OF PANEL.
- B. PROVIDE HOLDERS WITH IDENTIFICATION CARDS FILLED OUT IN TYPEWRITTEN FORMAT OF CIRCUIT DESIGNATIONS FOR EACH PANELBOARD.
- C. EACH BRANCH CIRCUIT, CONTROL, AND SIGNAL CONDUCTOR SHALL BE LABELED WITH THE CIRCUIT NUMBER OR TERMINAL NUMBER IT IS CONNECTED TO. USE T&B VINYL OR BRANDY PERMASHIELD MYLAR MARKERS. CONDUCTORS SHALL BE LABELED AT EACH PANELBOARD, SWITCHBOARD, CONTROL CENTER, TERMINAL CABINET, PULL BOX AND EACH POINT OF UTILIZATION SUCH AS FIXTURES, MOTORS, CONTROLS, ETC. LABELING SHALL CORRESPOND TO CONTROL DIAGRAMS WHERE APPLICABLE.

1.16 WARRANTY

A. GUARANTEE ALL WORK FOR ONE YEAR FROM DATE OF ACCEPTANCE AGAINST ALL DEFECTS IN MATERIAL, EQUIPMENT AND WORKMANSHIP.

1.17 RECORD AS-BUILT DRAWINGS

- A. THE CONTRACTOR SHALL KEEP A SEPARATE SET OF ELECTRICAL DRAWINGS AT THE JOB SITE TO BE USED AS RECORD DRAWINGS. THESE DRAWINGS ARE TO BE KEPT CURRENT AND IN A NEAT AND CLEAN CONDITION AT ALL TIMES. THEY ARE TO BE AVAILABLE FOR INSPECTION BY THE ARCHITECT OR ENGINEER AT ANY TIME DURING SITE VISITATIONS. THESE DRAWINGS SHALL BE "RED LINED" TO INDICATE ALL CHANGES IN EQUIPMENT, DEVICE, AND OUTLET LOCATIONS; AND TO INDICATE THE TRUE LOCATIONS OF ALL CONCEALED OR UNDERGROUND WORK WHERE DIFFERENT FROM THAT SHOWN ON THE DRAWINGS. EACH SHEET OF THIS SET SHALL BE CLEARLY AND PERMANENTLY MARKED "RECORD AS—BUILT DRAWINGS".
- B. UPON COMPLETION OF THE PROJECT AND PRIOR TO FINAL PAYMENT, TRANSFER ALL RECORD DRAWINGS INFORMATION TO THE PROVIDED ORIGINAL DRAWINGS. ALL INFORMATION SHALL BE CLEARLY DRAWN WITH "RED" INK. THE DRAWINGS SHALL BE SCANNED, 100% EDITED, AND CONVERTED INTO AN AUTOCAD ".DWG" VERSION 2000 (OR HIGHER) ELECTRONIC FILE. DELIVER THE ORIGINAL, FINAL SETS AND ELECTRONIC FILES (CD) TO THE ARCHITECT FOR REVIEW AND DELIVERY TO THE DISTRICT'S REPRESENTATIVE/OWNER.

PART 2 _ PRODUCTS

2.01 MATERIALS

- A. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL MATERIAL SHALL BE NEW AND FREE FROM DEFECTS; IT SHALL BE LISTED BY UNDERWRITERS LABORATORIES WHERE APPLICABLE. LIKE ITEMS SHALL BE OF THE SAME MANUFACTURER (EXCEPT LIGHTING FIXTURES WHICH SHALL BE AS SPECIFIED).
- B. EXCEPT AS NOTED OTHERWISE, WHERE MATERIAL OF A PARTICULAR MANUFACTURER IS SPECIFIED, THE INTENT IS TO DESCRIBE THE QUALITY AND FUNCTION OF THE ITEM. THE TERM "...OR <u>APPROVED</u> EQUAL" IS IMPLIED. A SUBSTITUTION OF ANY OF THESE ITEMS WILL REQUIRE THAT THE ITEM BE PRESENTED IN A SUBMITTAL WHERE SPECIFICALLY LISTED IN THE "SUBMITTALS" PARAGRAPH ABOVE.

2.02 ENCLOSURES

SUBJECT TO WATER SPRAY.

- A. PROVIDE ENCLOSURES SUITABLE FOR THE SPECIFIC TYPE OF LOCATION IN WHICH THEY ARE INSTALLED.
- 1. PROVIDE NEMA 1 OR NEMA 12 BOXES AND ENCLOSURES FOR DRY LOCATIONS. DRY LOCATIONS ARE ALL INDOOR AREAS THAT DO NOT FALL WITHIN THE DEFINITIONS BELOW FOR WET OR DAMP LOCATIONS.

3. PROVIDE NEMA 4 BOXES AND ENCLOSURES FOR DAMP LOCATIONS. DAMP LOCATIONS ARE ALL INDOOR SPACES WHOLLY OR PARTIALLY UNDERGROUND OR ANY AREA

2. PROVIDE NEMA 3R BOXES AND ENCLOSURES FOR WET LOCATIONS. WET LOCATIONS ARE ALL LOCATIONS EXPOSED TO WEATHER, WHETHER UNDER A ROOF OR NOT.

ENGINEER

WARREN CONSULTING ENGINEERS, INC. 1117 WINDFIELD WAY, SUITE 110

EL DORADO HILLS, CA 95762 | (916) 985-1870

ENGINEER:

ENGINEERS

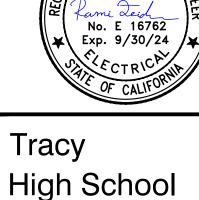
MEP & FS / Sustainability / Ci 1209 Pleasant Grove Blvd. Roseville, CA 95678 p 916-771-0778

www.lpengineers.com

Job #: 22-2021



Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tennis Cour

315 E. 11th Street Tracy, CA 95376

Repairs

REVISIONS

DESCRIPTION

DRAWN:

BS

AS NOTED

CHECKED:

PROJECT NO.

RN

22-054

DESIGNED:

DATE:

RN

11-11-2022

BID SET

SHEET TITLE:

SSUANCE:

ELECTRICAL SPECIFICATIONS

SHEET NO.

2.03 PANELBOARDS

- C. ACCEPTABLE MANUFACTURERS:
- 1. CUTLER HAMMER
- 2. SQUARE D 3. SIEMENS
- B. PANELBOARDS SHALL BE OF A TYPE AND RATING AS INDICATED ON THE PANEL SCHEDULE(S) ON THE DRAWINGS. THEY SHALL BE DEAD FRONT WITH HARDWARE FOR ACCEPTING MOLDED CASE <u>BOLT-ON</u> CIRCUIT BREAKERS OF THE MAXIMUM SIZE ALLOWABLE IN EACH SPACE. THE ENTIRE ASSEMBLY INCLUDING CIRCUIT BREAKERS SHALL BE RATED FOR NOT LESS THAN THE AVAILABLE SHORT CIRCUIT CURRENT SHOWN ON THE DRAWINGS (22,000 AMPS SYMMETRICAL WHEN NOT OTHERWISE INDICATED).

C. RATINGS:

- SEE PANEL SCHEDULES.
- 2. INTERRUPTING RATING: REFER TO ONE LINE DIAGRAM. COMPLY WITH CEC 110.9 AND 110.10. PROVIDE AIC CALCULATIONS IF REQUIRED.
- D. FINISH: ALL PAINTED STEEL WORK SHALL BE TREATED WITH A PRIMER COAT AND FINISH COAT OF THE MANUFACTURER'S STANDARD GRAY COLOR OR ANSI 61.

E. BUSSING:

- 1. BUSSING SHALL BE RECTANGULAR CROSS SECTION COPPER.
- 2. EACH PANELBOARD SHALL BE EQUIPPED WITH A GROUND BUS SECURED TO THE INTERIOR OF THE ENCLOSURE. THE BUS SHALL BE EQUAL TO THE PANELBOARD NEUTRAL BUS AND SHALL HAVE A SEPARATE LUG FOR EACH GROUND CONDUCTOR. NOT MORE THAN ONE CONDUCTOR SHALL BE INSTALLED PER LUG.

- 1. VOLTAGE 240 VAC OR 480 VAC AS SHOWN ON PLANS.
- 2. INTERRUPTING RATING: SEE PANEL SCHEDULES.
- 3. MANUFACTURER SHALL BE THE SAME AS THE PANELBOARD OR SWITCHBOARD IN WHICH THEY ARE MOUNTED.
- 4. WHERE TWO OR THREE POLE BREAKERS OCCUR IN THE PANELS, THEY SHALL BE COMMON TRIP UNITS. SINGLE POLE BREAKERS WITH TIE_BAR BETWEEN HANDLES WILL
- 5. BREAKERS SHALL HAVE TOGGLE, QUICK_MAKE, AND QUICK_BREAK OPERATING MECHANISMS WITH TRIP_FREE FEATURE TO PREVENT CONTACTS BEING HELD CLOSED AGAINST OVERCURRENT CONDITIONS IN THE CIRCUIT. TRIP POSITION OF THE BREAKERS SHALL BE CLEARLY INDICATED BY MOVEMENT OF THE OPERATING HANDLES TO THE CENTER
- G. HACR RATED CIRCUIT BREAKERS SHALL BE PROVIDED TO PROTECT ALL FEEDERS AND BRANCH CIRCUITS TO NON-FUSED HVAC AND REFRIGERATION EQUIPMENT AND WHERE REQUIRED BY EQUIPMENT LISTING CONDITIONS.
- H. NAMEPLATES AND DIRECTORY: EACH PANEL SHALL HAVE A NEATLY TYPEWRITTEN DIRECTORY WITH THE NAME AND NUMBER OF THE ROOM OR THE EQUIPMENT SERVED BY EACH CIRCUIT BREAKER WHICH SHALL CORRESPOND WITH THE FINAL CIRCUIT ARRANGEMENT. SPACES IN DIRECTORIES FOR SPARE CIRCUIT BREAKERS SHALL BE NEATLY MARKED "SPARE" IN PENCIL. THE DIRECTORY SHALL ALSO INDICATE THE PANEL DESIGNATION, VOLTAGE AND PHASE AT THE TOP. EACH DIRECTORY SHALL BE MOUNTED IN METALLIC INDEX CARD HOLDER BEHIND A CLEAR PLASTIC WINDOW.

2.04 DISCONNECT SWITCHES

A. HEAVY-DUTY TYPE SAFETY SWITCHES AS MANUFACTURED BY EATON, SIEMENS, OR SQUARE D. FURNISH WITH ENCLOSURE SUITABLE FOR APPLICATION. PROVIDE FUSED TYPE WHERE INDICATED OR REQUIRED BY CODE.

2.05 MOTOR STARTERS

A. DISCONNECT SWITCH TYPE COMPLETE WITH (3) OVERLOAD RELAYS AND ENCLOSURE SUITABLE FOR APPLICATION. CUTLER_HAMMER, SIEMENS, OR SQUARE D.

2.06 FUSES

- A. FUSES SHALL BE PROVIDED PER MANUFACTURER'S EQUIPMENT NAMEPLATE FOR ALL FUSE HOLDERS AS SHOWN ON THE DRAWINGS AND AS REQUIRED FOR SUPPLEMENTAL PROTECTION AND SPECIFIED HEREIN. THEY SHALL BE CURRENT-LIMITING, NON-RENEWABLE AS INDICATED ON THE DRAWINGS - FUSETRON OR LIMITRON TYPE MANUFACTURED BY BUSSMAN OR EQUAL. ALL FUSES SHALL BE THE PRODUCT FROM THE SAME MANUFACTURER. PROVIDE (3) SPARE FUSES FOR EACH SIZE AND CLASS OF FUSE USED.
- B. MAIN AND FEEDER PROTECTION:
- 1. WHERE RATING OF PROTECTIVE DEVICE IS GREATER THAN 600 AMPERE, PROVIDE BUSSMAN HI-CAP FUSES, CLASS L, CURRENT LIMITING, HAVING AN INTERRUPTING RATING
- 2. WHERE RATING OF PROTECTIVE DEVICE IS 600 AMPERE OR LESS, PROVIDE BUSSMAN CLASS R FUSES, CLASS RKI CURRENT LIMITING FUSES, HAVING AN INTERRUPTING RATING OF 200,000 AMPERE RMS.

C. MOTOR PROTECTION:

- 1. WHERE RATING OF PROTECTIVE DEVICE IS 600 AMPERE OR LESS, PROVIDE BUSSMAN FUSETRON DUAL-ELEMENT FUSES, CLASS RK5, HAVING AN INTERRUPTING RATING OF 200,000 AMPERE RMS.
- 2. WHERE FUSES FEEDING MOTORS ARE INDICATED BUT NOT SIZED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE FUSE SIZE WITH THE MOTOR TO PROVIDE PROPER MOTOR RUNNING PROTECTION.

2.07 RACEWAY AND FITTINGS

- A. RIGID STEEL CONDUIT:
- 1. COMPLY WITH UNDERWRITERS LABORATORIES UL 6 SPECIFICATION, ANSI C80.1 AND FEDERAL SPECIFICATION WW_C_581E OR LATEST REVISIONS. HOT DIP GALVANIZED ON THE EXTERIOR, ZINC OR ENAMEL ON THE INTERIOR.
- 2. COUPLINGS, LOCKNUTS, AND ALL OTHER FITTINGS SHALL BE GALVANIZED OR SHERARDIZED, WATERPROOF AND THREADED TYPE ONLY. APPLETON, CROUSE_HINDS OR

B. INTERMEDIATE METALLIC CONDUIT (IMC):

- 1. COMPLY TO PROPOSED UNDERWRITERS LABORATORIES UL 1242 AND FEDERAL SPECIFICATION WW_C_581E OR LATEST REVISION. HOT DIPPED GALVANIZED ON THE EXTERIOR, CORROSION INHIBITING COATING ON THE INTERIOR.
- 2. COUPLINGS, LOCKNUTS, AND ALL OTHER FITTINGS SHALL BE GALVANIZED OR SHERARDIZED, WATERPROOF AND THREADED TYPE ONLY. SAME MATERIAL AS CONDUIT. APPLETON, CROUSE_HINDS OR EQUAL.

C. ELECTRICAL METALLIC TUBING (EMT):

- 1. COMPLY WITH UNDERWRITERS LABORATORIES UL 797, ANSI C80.3 AND FEDERAL SPECIFICATION WW_C_563 OR LATEST REVISIONS. EMT SHALL BE GALVANIZED OR
- 2. COUPLINGS AND CONNECTORS FOR EMT SHALL BE GALVANIZED OR CADMIUM PLATED AND SHALL BE OF THE COMPRESSION TYPE REQUIRING THE TIGHTENING OF A NUT ON A GLAND RING OR AN APPROVED STEEL SET SCREW TYPE. APPLETON, CROUSE_HINDS OR EQUAL. NO DIE CAST TYPE ALLOWED.

D. FLEXIBLE METALLIC CONDUIT:

- 1. GALVANIZED INTERLOCKED SPIRALLY WOUND STEEL STRIP.
- 2. NEOPRENE JACKETED FLEXIBLE METALLIC CONDUIT SHALL BE USED IN ALL MOIST OR WEATHERPROOF LOCATIONS WHERE FLEXIBLE CONDUIT IS REQUIRED.
- 3. FITTINGS SHALL BE HOT DIPPED GALVANIZED COMPRESSION OR CLAMP TYPE. FITTINGS WHICH USE A SCREW TO BIND AGAINST TUBING OR WHICH SCREW INTO THE END OF THE CONDUIT, WILL NOT BE ACCEPTED. FITTINGS FOR NEOPRENE JACKETED FLEXIBLE CONDUIT SHALL BE OF THE SCREW IN TYPE. APPLETON STB SERIES. APPLETON, CROUSE_HINDS OR EQUAL MAY BE USED.
- E. POLYVINYLCHLORIDE (PVC): RIGID HEAVY WEIGHT TYPE, SCHEDULE 40, COMPLETE WITH PVC FITTINGS.
- F. ELECTRICAL NON_METALLIC TUBING (ENT): ELECTRICAL NON_METALLIC TUBING (ENT) IS NOT PERMISSIBLE FOR USE ON THIS PROJECT.
- G. CONDUIT SUPPORTS:
- 1. PIPE HANGERS FOR INDIVIDUAL CONDUITS SHALL BE THREADED SUSPENSION ROD. THE PIPE RING SHALL BE MALLEABLE IRON, SPLIT AND HINGED, OR SHALL BE SPRINGABLE WROUGHT STEEL. RINGS SHALL BE BOLTED TO OR INTERLOCKED WITH THE SUSPENSION ROD SOCKET.
- 2. PIPE RACKS FOR GROUPS OF PARALLEL CONDUITS SHALL BE CONSTRUCTED OF GALVANIZED STRUCTURAL STEEL PREFORMED CHANNELS OF LENGTH AS REQUIRED,

- SUSPENDED ON THREADED RODS AND SECURED THERETO WITH NUTS ABOVE AND BELOW THE CROSS BAR.
- FACTORY MADE PIPE STRAPS SHALL BE ONE_HOLE MALLEABLE IRON OR TWO_HOLE GALVANIZED CLAMPS.
- 4. STRUT CHANNEL SHALL BE: KINDORF, UNISTRUT, T&B OR EQUAL.
- H. OUTLET BOXES: GALVANIZED STEEL. BOXES INSTALLED IN ANY EXTERIOR LOCATION, WHERE EXPOSED TO RAIN OR WHERE EXPOSED TO MOISTURE LADEN ATMOSPHERE SHALL BE CAST SCREW HUB TYPE WITH GASKETED WEATHERPROOF COVERS. BOXES FOR VAPOR PROOF OR EXPLOSION PROOF APPLICATIONS SHALL BE DESIGNED SPECIFICALLY FOR
- 1. EACH BOX SHALL BE LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER AND SIZES OF CONDUITS, WIRES, SPLICES AND DEVICES BUT NOT SMALLER THAN SIZE

I. PULL BOXES AND CABINETS:

- 1. PRE_FABRICATED CONCRETE TYPE, CHRISTY CONCRETE PRODUCTS, BROOKS, OR EQUAL. ALL BOXES SHALL HAVE STANDARD BRASS HOLD_DOWN BOLTS AND HARDWARE. BOXES LOCATED IN PAVED AREAS OR OTHER AREAS OVER WHICH VEHICLES NORMALLY MAY TRAVEL SHALL HAVE TRAFFIC COVERS.
- 2. ALL PULL BOXES AND CABINETS SHALL BE CODE GAUGE GALVANIZED STEEL.

2.08 WIRE AND CABLE

A. LABELING:

MARKED ON 24 INCH CENTERS AS FOLLOWS:

- 1. UNDERWRITERS LABEL
- 2. GAUGE
- 3. VOLTAGE 4. KIND OF INSULATION
- 5. NAME OF MANUFACTURER TRADE NAME

B. INSULATION:

- 1. ALL CONDUCTORS #10 AND SMALLER, SHALL BE 600 VOLT, TYPE THWN, THW, TW OR THHN UNLESS NOTED OTHERWISE.
- 2. ALL CONDUCTORS FOR UNDERGROUND AND CONDUCTORS #8 AND LARGER SHALL BE 600 VOLT, TYPE XHHW OR THWN UNLESS NOTED OTHERWISE.
- 3. INSULATION TYPE XHHW SHALL BE USED FOR WIRE SIZES #2 AND LARGER.
- 4. ALL CIRCUIT CONDUCTORS INSTALLED WITHIN FLUORESCENT FIXTURE RACEWAYS SHALL BE 600 VOLT, 105-DEGREE TYPE RHH, OR THHN, EXCEPT IN FIXTURES THAT HAVE WIRING RACEWAYS SPECIFICALLY APPROVED FOR 75 DEGREE CENTIGRADE WIRE.

C. GROUNDING WIRE:

1. GROUNDING WIRE #1/0 OR LARGER TINNED STRANDED COPPER CABLE. ALL SMALLER GROUND WIRES SHALL BE INSULATED WITH GREEN COLOR INSULATION

D. COLOR CODING OF CONDUCTORS:

1. THE GUIDELINES OF THE NEC SHALL BE FOLLOWED WHEN SELECTING WIRE COLORS. GENERALLY, ALL PHASE WIRES FOR POWER CONDUCTORS OF THE SAME SYSTEM MAY BE THE SAME COLOR EXCEPT AS FOLLOWS:

<u>PHASE</u>	120/208 VOLTS	277/480 VOLT
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW
NEUTRAL	WHITE	GRAY
GROUND	GREEN	GREEN
ISOLATED GROUND	LIGHT GREEN OR LIGHT GREEN WITH WHITE	STRIPE

- 2. THESE COLORS MAY BE THE CONDUCTOR INSULATION COLORS OR THE COLORS MAY BE APPLIED USING INDICATING TAPE MANUFACTURED FOR THE PURPOSE.
- 3. IN ADDITION TO COLOR CODING, ALL POWER, CONTROL, AND ALARM WIRING SHALL BE NUMBERED AND IDENTIFIED BY MEANS OF WIRE MARKERS AT ALL SWITCHBOARDS, PANELBOARDS, AUXILIARY GUTTERS, JUNCTION BOXES, PULL BOXES, RECEPTACLE OUTLETS, LIGHT OUTLETS, DISCONNECT SWITCHES, AND CIRCUIT BREAKERS. THESE MARKERS SHALL CORRESPOND TO NUMBERS ON SHOP DRAWINGS
- 4. CONDUCTORS IN SIZES UP THROUGH #10 AWG SHALL HAVE SOLID COLOR FINISH AS LISTED ABOVE. NO. EIGHT (#8) AWG AND LARGER SHALL BE CODED BY APPLICATION OF PHASE TAPE FOR MINIMUM OF 6 INCH LENGTH ON CONDUCTOR. CODING SHALL OCCUR ON ALL SPLICES AND TERMINATION AND PULL BOXES.

E. CONDUCTORS:

- 1. UNLESS SPECIFICALLY NOTED OTHERWISE HEREIN, ALL CONDUCTORS FOR GENERAL WIRING SHALL BE A MINIMUM OF 98% CONDUCTIVITY, STRANDED, SOFT DRAWN COPPER.
- 2. CONDUCTORS FOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS NO. 8 AND SMALLER SHALL BE SIMILAR TO THE ABOVE EXCEPT SOLID COPPER MAY BE USED.
- 3. EXCEPT WHERE NOTED ON THE PLANS OR IN THIS SPECIFICATION, THE MINIMUM CONDUCTOR SIZE FOR BRANCH CIRCUITS SHALL BE NO. 12. MINIMUM SIZE MECHANICAL EQUIPMENT CONTROL CIRCUITS WHERE COVERED UNDER THIS SPECIFICATION SHALL BE NO. 14.
- 4. ALUMINUM CONDUCTORS ARE NOT ALLOWED UNLESS SPECIFICALLY CALLED OUT FOR ON DRAWINGS.
- F. PULLING LUBRICANT: UL APPROVED.

G. CONNECTIONS:

- 1. NUMBER EIGHT (#8) AND SMALLER, PRE_INSULATED SPRING TYPE CONNECTORS. THREADED OR CRIMP TYPES WILL NOT BE ACCEPTED. USE SCOTCHLOCK, HYDENT, T&B OR EQUAL.
- 2. TERMINALS FOR STRANDED CONDUCTORS NO. 8 AND SMALLER SHALL BE A PRE_INSULATED CRIMP TYPE.
- 3. LUGS AND CONNECTORS FOR CONDUCTORS NO. 6 AND LARGER SHALL BE COMPRESSION TYPES OF ONE PIECE TUBULAR CONSTRUCTION WITH FLAT RECTANGULAR TONGUES. TWO HOLE LUGS SHALL BE USED FOR SIZES 4/0 AND LARGER. FITTINGS FOR COPPER CONDUCTORS SHALL BE TIN_PLATED COPPER. FITTINGS FOR ALUMINUM CONDUCTORS SHALL BE TIN_PLATED ALUMINUM, FACTORY FILLED WITH A CORROSION INHIBITING AND OXIDE PENETRATING COMPOUND.
- 4. CAST RESIN KITS SHALL BE SCOTCHLOCK SEALING PACKS FOR WIRE SIZE TO #10 AND SCOTCHLOCK KITS FOR LARGER SPLICES AS RECOMMENDED BY 3M COMPANY.

2.09 WIRING DEVICES

A. WALL SWITCHES:

- 1. UREA BASE, TOGGLE TYPE WITH 20A 120_277V. A.C. RATING FOR FULL CAPACITY OF CONTACTS FOR INCANDESCENT OR FLUORESCENT LAMP LOADS. SWITCHES SHALL BE BACK AND SIDE WIRED, SELF GROUNDING. CONTACTS SHALL BE SILVER_CADMIUM OXIDE DESIGNED FOR QUIET OPERATION. COMPLY WITH FEDERAL SPECIFICATION W_S_896E WITH NEMA WD_1_3.02 AND UL 20 TESTS OR LATEST REVISIONS. COLOR AS SELECTED BY ARCHITECT OR OWNER.
- 2. SCHEDULE OF ACCEPTABLE TYPES:

WITCH TYPE	COOPER	LEVITON	HUBBELL
TOGGLE SWITCH:	-		
SINGLE POLE	12211	1221-21	12211
DOUBLE POLE	12221	1222-21	12221
THREE WAY	1223	1223-21	1223
FOUR WAY	1224	1224-21	1224
DECORATOR ROCKER SW	/ITCH:		
SINGLE POLE	7621V	5621-21	DS120I
DOUBLE POLE	7622V		DS220I
THREE WAY	7623V	5623-21	DS320I
FOUR WAY	7624V	5624-21	DS420I
SPECIAL:			
SPDT CNTR OFF	4356	1285	1385
DPDT CNTR OFF	4361	1285	1385
DPDT (2-POS)	1276		

MOMENTARY: SPDT CNTR OFF 4354 4921 1557 DOOR JAMB: N.O. 4029 2968 DOOR JAMB: N.C. 4030 2969

- 3. WEATHERPROOF SWITCH (SP 125V, 10A) HUBBELL #5121—0, OR ACCEPTED EQUAL, COMPLETE WITH SWITCH AND GASKET.
- 4. KEY SWITCHES: EQUIVALENT TO LISTED SWITCHES, ACTIVATED WITH REMOVABLE KEY.
- 5. SWITCH WITH PILOT LIGHT COOPER #2221PL, OR ACCEPTED EQUAL.

B. CONVENIENCE OUTLETS:

- 1. GROUNDING, 20 AMPERE, 125 VOLT, NEMA 5_20R CONFIGURATION, NYLON HOUSING, SELF GROUNDING. COMPLY TO FEDERAL SPECIFICATION W_C_596E, NEMA WD1_4.02 AND UL 498 OR LATEST REVISIONS. COLOR AS SELECTED BY ARCHITECT OR OWNER.
- 2. SCHEDULE OF APPROVED TYPES:

<u>OUTLET TYPE</u>	COOPER	LEVITON	HUBBELL
20 A, 125 V; HEAVY USE DUPLEX	5362	5362A	5362
20 A, 125 V; DUPLEX	5362	5362A	5352
30 A, 125/250 V	5744N*	278	9430A
50 A, 125/250 V	5754N**	279	9450A
20 A, 125 V; ISOLATED GND	IG5362	5362IG	IG5362
20 A, 125 V, GFI	GF5342	6899GFI	GF53522.03

- 3. WEATHERPROOF RECEPTACLE "GFCI" HUBBELL #5103—0.
- 4. WEATHERPROOF AND LOCKABLE RECEPTACLE, WEATHERPROOF WITH PROVISION FOR PADLOCK-BRYANT #63101-PL.
- 5. WEATHERPROOF RECEPTACLE INTENDED FOR UNATTENDED USE (IRRIGATION CONTROLLER OUTLET, SUMP PUMP OUTLET, ETC) COVER PLATE SHALL BE PROVIDED WITH A POLYCARBONATE CORD CAP GASKET ENCLOSURE LISTED "SUITABLE FOR WET LOCATIONS WHILE IN USE". USE TAYMAC SAFETY OUTLET ENCLOSURE OR EQUAL.
- 6. ISOLATED GROUND RECEPTACLE, NEMA 5-20R WITH AN ORANGE COLOR TRIANGLE LOCATED ON THE FACE OF THE RECEPTACLE PER NEC 406.2(D).
- C. PLATES: PLATES SHALL BE SUPPLIED FOR EVERY LOCAL SWITCH, RECEPTACLE, ETC. PLATES SHALL BE STAINLESS STEEL OR NYLON TO MATCH WALL FINISH. FURNISH WITH ENGRAVED OR ETCHED DESIGNATIONS UNDER ANY ONE OF THE FOLLOWING CONDITIONS:
- 1. THREE GANG OR LARGER GANG SWITCHES.
- 2. SWITCHES IN LOCATIONS FROM WHICH THE EQUIPMENT OR CIRCUITS CONTROLLED CANNOT BE READILY SEEN.
- 3. WHERE SO INDICATED ON THE DRAWINGS.
- 4. AS REQUIRED ON ALL CONTROL CIRCUIT SWITCHES, SUCH AS HEATER CONTROLS, ETC.
- 5. WHERE RECEPTACLES ARE OTHER THAN STANDARD DUPLEX RECEPTACLES, TO INDICATE VOLTAGE AND PHASE.
- 6. PROVIDE COVER PLATES FOR ALL TELEPHONE AND COMPUTER OUTLETS.

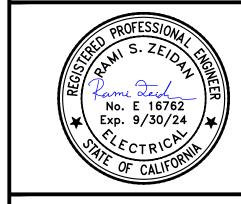




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High School **Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

REVISIONS									
NO.	DESCRIPTION								
	(A) =								

DRAWN: | SCALE: AS NOTE CHECKED: PROJECT NO. 22-05 ESIGNED: DATE: RN l 11-11-202 SSUANCE:

BID SET

ELECTRICAL SPECIFICATIONS

SHEET TITLE:

2.10 LIGHTING FIXTURES AND ACCESSORIES

- B. LIGHT FIXTURES: SUPPLY LIGHT FIXTURES AS INDICATED ON FIXTURE SCHEDULE.
 - 1. MANUFACTURER OF FIXTURES: ALL FIXTURES OF ONE TYPE SHALL BE OF ONE MANUFACTURER AND OF IDENTICAL FINISH AND APPEARANCE.
- C. ACCESSORIES: ALL FIXTURES SHALL BE COMPLETE WITH ACCESSORIES, END REQUIRED FOR THE SPECIFIC INSTALLATION.
- D. LAMPS: SUPPLY LAMPS AS INDICATED ON FIXTURE SCHEDULE.
- 1. LAMP MANUFACTURER: LAMPS SHALL BE MANUFACTURED BY GENERAL ELECTRIC CO., SYLVANIA, OR EQUAL.
- D. BALLASTS: BALLASTS FOR FLUORESCENT FIXTURES SHALL BE ENERGY EFFICIENT SOLID STATE TYPE, INTEGRAL WITH THE FIXTURE, AND HAVE A HIGH POWER FACTOR (MINIMUM 90% P.F.) HID BALLASTS SHALL BE HIGH POWER FACTOR TYPE. EACH TYPE OF BALLAST SHALL BE UL LISTED (CLASS P) WITH INTEGRAL THERMAL PROTECTION IN BOTH THE CORE AND COIL ASSEMBLY AND THE CAPACITOR ASSEMBLY.
- 1. BALLASTS SHALL MAINTAIN CONSTANT LIGHT OUTPUT OF ALL RAPID START FLUORESCENT LAMPS OVER OPERATING RANGES OF 90 V TO 145 V (120 V BALLASTS) AND 200 V TO 320 V (277 V BALLASTS). INPUT CURRENT TOTAL HARMONIC DISTORTION CONTENT SHALL BE LESS THAN 10% OF RATED (FUNDAMENTAL) INPUT CURRENT. BALLASTS SHALL WITHSTAND LINE TRANSIENTS AS DEFINED IN ANSI/IEEE C62.41, CATEGORY A. BALLASTS SHALL MEET THE REQUIREMENTS OF FCC, PART 18, CLASS A.
- 2. BALLASTS SHALL HAVE A SEQUENCED START PROGRESSION WHICH FIRST HEATS CATHODE FILAMENTS AND THEN IGNITES LAMP(S). BALLASTS SHALL OPERATE AT A FREQUENCY ABOVE 20 KHZ. BALLAST CASE TEMPERATURE SHALL NOT EXCEED 25° C TEMPERATURE RISE OVER 40° C AMBIENT.
- 3. BALLAST NOISE: ALL BALLASTS SOUND LEVELS SHALL NOT EXCEED CLASS A AMBIENT NOISE LEVELS. SOUND RATED 'A' BALLASTS FOUND TO BE NOISY AFTER INSTALLATION, IN THE OPINION OF THE OWNER, SHALL BE REMOVED AND REPLACED.
- 4. BALLAST MANUFACTURER: BALLASTS SHALL BE AS MANUFACTURED BY GENERAL ELECTRIC CO., UNIVERSAL, ADVANCE OR EQUAL, UNLESS OTHERWISE SPECIFIED ON DRAWINGS.

E. DIMMABLE LED DRIVERS

- 1. DIMMING RANGE: CONTINUOUS DIMMING FROM 100 PERCENT TO 10 PERCENT RELATIVE LIGHT OUTPUT UNLESS DIMMING CAPABILITY TO LOWER LEVEL IS INDICATED, WITHOUT FLICKER.
- F. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE FIXTURES WITH CEILING TYPES AND SUPPLY VOLTAGES.
- G. FIXTURES INSTALLED IN RATED CEILINGS SHALL BE LISTED FOR USE IN SUCH CEILINGS.

2.11 LIGHTING CONTROL

A. REFER TO DRAWINGS FOR SCHEDULES AND/OR SPECIFICATION NOTES.

2.12 OCCUPANCY SENSORS

A. REFER TO DRAWINGS FOR SCHEDULES AND/OR SPECIFICATION NOTES.

2.13 TERMINAL CABINETS

- A. ALL TERMINAL CABINETS SHALL BE SIZED PER APPLICABLE ELECTRICAL CODE, U.L. LISTED, AND SUITABLE FOR THE CONDITIONS OF INSTALLATION. EACH CABINET SHALL BE PROVIDED HAVING SUFFICIENT VOLUME, PROPER DIMENSIONS, AND GEOMETRY FOR THE DEVICE(S) TO BE INSTALLED AND THE NUMBER OF CONDUITS AND WIRES AT THAT LOCATION
- B. ALL TERMINAL CABINETS SHALL BE PROVIDED WITH HINGED LOCKABLE DOORS SUITABLE TO THE CONDITIONS OF THE INSTALLATION.
- C. CONSTRUCTION OF TERMINAL AND DEVICE CABINETS SHALL BE SIMILAR TO PANELBOARDS, FLUSH COMBINATION LATCH AND LOCK, RECESSED IN FINISHED AREAS, ETC. ALL LOCKS SHALL BE KEYED ALIKE BUT DIFFERENT FROM PANELBOARDS. ENCLOSURE SHALL BE NEMA 3 (RAIN AND DUST TIGHT) WHERE INSTALLED OUTDOORS UNLESS OTHERWISE SPECIFIED. A "PLAN POUCH" SHALL BE FACTORY ASSEMBLED TO THE INTERIOR OF THE CABINET DOOR SUITABLE FOR HOLDING A PLAN OF THE ASSOCIATED CONTROL SCHEME.
- D. BUILDING SIGNAL TERMINAL CABINET SIZES SHALL BE SUFFICIENT FOR THE RACEWAYS INDICATED ON THE DRAWINGS AND FOR THE TERMINATION AND CONTROL EQUIPMENT REQUIRED. THE CONTRACTOR SHALL SIZE THE CABINETS TO PROVIDE AMPLE WIRING AND TERMINATION SPACE FOR THE EQUIPMENT, WIRES, AND CABLES INDICATED ON THE DRAWINGS. THE SIZES SHALL NOT BE LESS THAN THOSE INDICATED ON THE DRAWINGS. MINIMUM TERMINAL CABINET SIZE FOR ANY LOCATION SHALL BE 24"H X 24"W X 6"D WHERE NOT NOTED OTHERWISE.
- E. A BACKBOARD OF 5/8" MINIMUM PLYWOOD, UNLESS NOTED ON PLANS, OR A METAL EQUIPMENT MOUNTING PANEL PROVIDED BY THE CABINET MANUFACTURER HAVING A SIZE APPROXIMATELY THE SAME AS THE DOOR OPENING SHALL BE INSTALLED WITHIN THE CABINET.
- F. METAL DIVIDERS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS. FINISH SAME AS PANEL INTERIOR.
- G. TERMINAL STRIPS OR BLOCKS SHALL BE DOUBLE ROW STRAP SCREW WITH CLAMP OR TUBE—SCREW TYPE WITH WRITE—ON STRIP DOWN THE CENTER. THEY SHALL ACCEPT WIRE SIZES AS INDICATED ON THE DRAWINGS AND HAVE BARRIERS BETWEEN THE POLES. EXCEPT WHERE NOTED OTHERWISE, PROVIDE AT LEAST 10% SPARE TERMINAL POINTS. PUNCH BLOCKS SHALL BE USED TO TERMINATE COMMUNICATIONS CABLES AND OTHER SMALL SIZE WIRES.
- H. EXCEPT WHERE OTHERWISE SPECIFICALLY NOTED, PROVIDE ALL TERMINAL STRIPS, WIRING CHANNELS, MARKERS, AND OTHER DEVICES AS REQUIRED.

PART 3 _ EXECUTION

3.01 EXCAVATION AND BACKFILL

- A. PERFORM EXCAVATION AND BACKFILL REQUIRED FOR ELECTRICAL INSTALLATION. RESTORE ALL SURFACES, ROADWAYS, WALKS, CURBS, WALLS, EXISTING UNDERGROUND INSTALLATIONS, ETC., CUT BY INSTALLATIONS TO ORIGINAL CONDITION IN AN ACCEPTABLE MANNER.
- B. DIG TRENCHES STRAIGHT AND TRUE TO LINE AND GRADE, WITH BOTTOM SMOOTHED OF ANY ROCK POINTS. SUPPORT CONDUIT FOR ENTIRE LENGTH ON UNDISTURBED, ORIGINAL EARTH. MINIMUM CONDUIT DEPTH TO PIPE CROWN SHALL BE 24 INCHES BELOW FINISHED GRADE. CONSULT SERVING UTILITY COMPANIES FOR MINIMUM UTILITY CONDUIT DEPTHS.
- C. BACKFILL AND TAMP IN SIX_INCH LAYERS WITH EARTH FROM EXCAVATION TO FINISH GRADE. MAKE ALLOWANCES FOR SETTLEMENT.

3.02 INSTALLATIONS

A. CIRCUIT BREAKERS AND FUSES ARE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS. FUSES MUST SEAT SOLIDLY WITH ALL CONTACT SURFACES BEARING EVENLY. REPLACE WARPED, WEAK, OR BROKEN FUSE CLAMP TERMINALS. DO NOT ATTEMPT TO REPAIR OR BEND BACK INTO POSITION.

3.03 SWITCHBOARD INSTALLATION

- A. INSTALL A CONCRETE PAD THAT IS 3 INCHES HIGHER THAN SURROUNDING GRADE OR FLOOR, UNLESS NOTED ON PLAN. INSTALL ANCHORS FOR EACH SECTION PROVIDED. SET THE SWITCHBOARD IN POSITION AND LEVEL THE ENTIRE UNIT. RIGIDLY SECURE THE SWITCHBOARD TO THE PAD AND GROUT AROUND THE BASE AS REQUIRED TO MAKE WATERTIGHT SEAL. PROVIDE SUPPORT FOR CABLES ENTERING THE SWITCHBOARD AS REQUIRED FROM POINT OF ENTRY TO THE TERMINATION POINT.
- B. WHERE THE SWITCHBOARD IS INSTALLED OUTDOORS AND EXPOSED TO THE WEATHER, FORM A 1/4" MINIMUM DRAIN PATH FROM EACH SECTION OF THE SWITCHBOARD INTERIOR TO GRADE LEVEL BEYOND THE PAD. THIS MAY BE ACCOMPLISHED BY PLACING A 1/4" PLASTIC OR COPPER TUBE WITHIN THE PAD FORM PRIOR TO CONCRETE POUR. SECURE THE TUBE AGAINST MOVEMENT DURING THE POUR. CUT TUBES OFF FLUSH WITH PAD AFTER SWITCHBOARD IS SET.
- C. THE GROUND FAULT COMPONENTS SHALL BE TESTED BY A QUALIFIED TECHNICIAN PRIOR TO ENERGIZING SWITCHBOARD.
- D. NEATLY ARRANGE WIRING WITHIN THE EQUIPMENT. BUNDLE AND WRAP CONDUCTORS #8 AWG AND SMALLER WITH PLASTIC WIRE TIES.
- E. EVERY CONDUIT ENTERING THE SWITCHBOARD SHALL BE IDENTIFIED, AND 100% ACCESSIBLE WITH INSULATED BUSHING INSTALLED.
- F. FIELD ADJUSTMENTS:
- 1. THE CONTRACTOR SHALL PERFORM FIELD ADJUSTMENTS OF THE PROTECTIVE DEVICES AS REQUIRED TO PLACE THE EQUIPMENT IN FINAL OPERATING CONDITION. THE SETTINGS SHALL BE IN ACCORDANCE WITH THE ACCEPTED SHORT—CIRCUIT STUDY, PROTECTIVE DEVICE EVALUATION STUDY, AND PROTECTIVE DEVICE COORDINATION STUDY.
- 2. NECESSARY FIELD SETTINGS OF DEVICES, ADJUSTMENTS, AND MINOR MODIFICATIONS TO EQUIPMENT TO ACCOMPLISH CONFORMANCE WITH AN ACCEPTED SHORT CIRCUIT AND PROTECTIVE DEVICE COORDINATION STUDY SHALL BE CARRIED OUT BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

3.04 PANELBOARD INSTALLATION

- A. PANELBOARDS ARE TO BE INSTALLED PLUMB AND RIGIDLY SECURED TO STRUCTURE WITH WOOD SCREWS, MACHINE BOLTS AND CONCRETE ANCHORS, OR MACHINE BOLTS AND LOCKNUTS AS APPLICABLE.
- B. NAME PLATES SHALL BE INSTALLED AS INDICATED IN THIS SECTION.

- C. RECESSED PANELBOARDS SHALL HAVE COVERS FLUSH WITH THE WALL. INSTALL 1—SPARE 3/4" EMPTY CONDUIT FOR EACH (3) SINGLE POLE SPACES OR SPARE CIRCUIT BREAKER POLES. STUB AND CAP IN ACCESSIBLE ATTIC SPACE, ABOVE THE CEILING, OR BELOW THE FLOOR AS APPLICABLE. WHERE BOTH ACCESSIBLE FLOOR AND ATTIC SPACES ARE AVAILABLE, STUB SPARE CONDUITS HALF EACH WAY (ONE EACH WAY MINIMUM). IDENTIFY SPARE CONDUITS. WHERE BUILDING CONSTRUCTION IS FIRE RATED, ENCLOSE RECESSED PANEL IN 5/8" GYPSUM BOARD AS DIRECTED BY THE ARCHITECT.
- D. COORDINATE FRAMING REQUIREMENTS WITH OTHERS TO ACCOMMODATE PANELBOARD LOCATIONS WITHOUT REQUIRING FRAMING MEMBERS TO BE CUT AWAY FOR INSTALLATION. PROVIDE ADEQUATE BLOCKING FOR SURFACE MOUNTED PANELBOARDS AS APPLICABLE.

3.05 RACEWAY INSTALLATION

A. CONDUIT APPLICATION:

- 1. MINIMUM SIZE OF CONDUIT SHALL BE 1/2 INCH. IN NO CASE SHALL THE CONDUIT SIZE BE SMALLER THAN THAT SHOWN ON THE DRAWINGS.
- 2. PVC CONDUIT, MINIMUM SIZE 1", MAY ONLY BE INSTALLED BENEATH GRADE OR IN CONCRETE; A MAXIMUM OF 4 FEET. PVC MAY BE INSTALLED IN ELECTRICAL ROOMS OR CONCEALED IN STUD SPACES WHEN DESIGNATED ON PLANS. PVC SHALL NOT BE INSTALLED IN FIRE RATED AREAS OR WHERE SUBJECT TO MECHANICAL DAMAGE. THE PVC IS TO EXTEND ONLY FROM THE CONCRETE SLAB TO THE BOTTOM OF THE SWITCHBOARD, PANELBOARD, OR SIMILAR EQUIPMENT. (CEC 300.5, CEC 300.50, AND CEC. 352)
- 3. ALL CONDUIT RUNS EXPOSED ABOVE GRADE AND BELOW 8 FEET SHALL BE RIGID STEEL OR IMC, EXCEPT AS NOTED IN CONDUIT APPLICATIONS ITEMS 2 AND 4.
- 4. ELECTRICAL METALLIC TUBING (EMT) MAY BE INSTALLED IN PROTECTED ATTIC SPACES AND HOLLOW STUD SPACES. IT MAY BE EXPOSED ON THE SURFACE OF ELECTRICAL AND MECHANICAL ROOMS WHERE DESIGNATED ON THE PLANS.
- 5. FLEXIBLE METALLIC CONDUIT SHALL BE USED ONLY WHERE REQUIRED FOR CONNECTION TO MOTORS, ETC., OR WITH THE APPROVAL OF THE OWNER WHERE ABSOLUTELY NECESSARY DUE TO STRUCTURAL CONDITIONS.
- 6. BOXES INSTALLED INDOORS OR EMBEDDED IN CONCRETE SHALL BE GALVANIZED STEEL TYPE. BOXES INSTALLED EXPOSED OR OUTDOORS SHALL BE GALVANIZED CAST STEEL WITH THREADED HUBS.
- 7. CONDUIT FOR POWER COMPANY 12 KV PRIMARY LINES SHALL BE INSTALLED 54" BELOW GRADE.
- 8. BRANCH CIRCUIT CONDUITS UNDER SLAB SHALL BE SEPARATED BY AT LEAST ONE INCH. IN ALL CASES TWO OR MORE CONDUITS INSTALLED IN A COMMON CONCRETE ENCASEMENT SHALL BE SEPARATED BY AT LEAST THREE INCHES.
- 9. CONDUIT SHALL BE SECURELY FASTENED IN PLACE SO THAT ABSOLUTELY NO SHIFTING WILL OCCUR DURING PLACING OF CONCRETE ENCASEMENT.
- 10. JOINTS IN ALL CONDUIT INSTALLED IN CONCRETE, OR EXPOSED TO WEATHER, SHALL BE LIQUID AND GAS TIGHT.

B. CONDUIT LOCATION:

- 1. ALL CONDUITS SHALL BE RUN CONCEALED IN ALL FINISHED AREAS.
- 2. EXPOSED CONDUIT SHALL BE NEATLY INSTALLED PARALLEL TO OR AT RIGHT ANGLES TO THE STRUCTURAL MEMBERS.
- 3. EXPOSED CONDUIT STUBBING UP THROUGH THE FLOOR INTO THE BOTTOM OF EXPOSED PANELS, CABINETS OR EQUIPMENT SHALL BE LINED UP, PROPERLY SPACED AND SHALL BE STRAIGHT AND PLUMB. CONDUITS SHALL BE INSTALLED AT SUFFICIENT DEPTH BELOW THE FLOOR TO ELIMINATE ANY PART OF THE BEND ABOVE.
- 4. MAINTAIN 12-INCH SEPARATION BETWEEN POWER AND INTERCOMMUNICATION CABLES.
- 5. CONDUIT SHALL BE KEPT AT LEAST 6" FROM THE COVERING ON HOT WATER PIPES, AND 18" FROM THE COVERING ON FLUES AND BREECHINGS.

C. CONDUIT SUPPORT:

- 1. CONDUIT SHALL BE SUPPORTED WITH FACTORY MADE PIPE STRAPS OR SUSPENDED WITH PIPE HANGERS OR RACKS.
- 2. HANGER STRAPS, RODS, OR PIPE SUPPORTS UNDER WOOD SHALL BE ATTACHED TO THE WOOD STRUCTURE USING BOLTS, LAG BOLTS, OR LAG SCREWS. ATTACH TO TRUSSES USING BEAM CLAMPS.
- 3. CONDUITS, WHICH ARE SUSPENDED ON RODS MORE THAN 2 FEET LONG SHALL BE RIGIDLY BRACED TO PREVENT HORIZONTAL MOTION OR SWAYING.
- 4. CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING 10 FEET AND IN ALL CASES WITH A SUPPORT NOT MORE THAN 3 FEET FROM THE OUTLET AND AT ANY POINT WHERE IT CHANGES IN DIRECTION.
- 5. PERFORATED STRAP AND PLUMBER'S TAPE SHALL NOT BE USED IN THE SUPPORT OF CONDUITS.
- 6. CONDUIT PLACED AGAINST CONCRETE OR MASONRY ABOVE GROUND SHALL BE FASTENED TO THE CONCRETE WITH PIPE STRAPS OR ONE_SCREW CONDUIT CLAMPS ATTACHED TO THE CONCRETE BY MEANS OF EXPANSION ANCHORS AND SCREWS. EXPANDERS AND SHIELDS SHALL BE STEEL OR MALLEABLE IRON. SIZES OF SHIELDS AND BOLTS SHALL BE SUCH THAT THE PROOF TEST LOAD WILL NOT BE LESS THAN FOUR TIMES THE ACTUAL WORKING LOAD.

D. CONDUIT BENDS:

- 1. FIELD BENDS OR OFFSETS ARE PERMITTED IN 1 INCH AND SMALLER CONDUIT ONLY.
- 2. ELBOWS IN 1_1/4 INCH CONDUIT AND LARGER SIZES SHALL BE FACTORY MADE.
- 3. MINIMUM RADIUS BEND FOR TELEPHONE SERVICE ENTRANCE CONDUIT SHALL BE 36".
- 4. CONDUIT BENDS, OTHER THAN FACTORY ELBOWS, SHALL HAVE A RADIUS OF NOT LESS THAN 10 TIMES THE INTERNAL DIAMETER OF THE CONDUIT.
- 5. 90 DEGREE BENDS IN PVC LARGER THAN 2 INCHES SHALL BE STEEL.
- 6. USE OF A BLOW TORCH TO BEND CONDUIT IS SPECIFICALLY PROHIBITED.
- E. EMPTY CONDUITS: ALL CONDUITS, WHICH ARE INSTALLED AT THIS TIME AND LEFT EMPTY FOR FUTURE USE OR WHERE CONDUCTORS ARE TO BE INSTALLED BY A REPRESENTATIVE OF THE TELEPHONE COMPANY SHALL HAVE A 3/16 INCH POLYPROPYLENE ROPE LEFT IN PLACE FOR FUTURE USE.

F. CONDUIT PROTECTION:

- 1. CAP ALL CONDUIT DURING CONSTRUCTION BY MEANS OF MANUFACTURED SEALS. SWAB OUT ALL CONDUITS BEFORE PULLING IN WIRE.
- 2. ALL CONDUIT SYSTEMS MUST BE INSTALLED COMPLETE BEFORE CONDUCTORS ARE PULLED IN.

G. OUTLET BOXES:

- 1. BOXES MUST BE ACCURATELY PLACED FOR FINISH, INDEPENDENTLY AND SECURELY SUPPORTED BY MANUFACTURED BOX HANGERS. FIXTURE OUTLETS SHALL BE LOCATED SYMMETRICALLY.
- 2. LOCAL SWITCHES SHALL BE LOCATED +46 INCHES ABOVE THE FLOOR (TOP OF BOX) UNLESS OTHERWISE NOTED.
- 3. CONVENIENCE OUTLETS SHALL BE LOCATED +16 INCHES ABOVE THE FINISHED FLOOR (BOTTOM OF BOX) UNLESS OTHERWISE NOTED.
- 4. CHANGES IN OUTLET LOCATIONS OF FIXTURES, WALL SWITCHES, RECEPTACLES, AND SPECIAL EQUIPMENT FOUND NECESSARY DUE TO INTERFERENCE WITH STRUCTURE, PIPES, DUCTS, ETC. SHALL BE REPORTED TO THE OWNER FOR APPROVAL.
- 5. ALL BOXES SHALL BE OF PROPER CODE SIZE FOR THE NUMBER OF WIRES OR CONDUITS PASSING THROUGH OR TERMINATING THEREIN, BUT IN NO CASE SHALL ANY BOX BE LESS THAN 4" SQUARE, UNLESS SPECIFICALLY NOTED AS SMALLER. COVERS SHALL BE OF THE TYPES MOST SUITABLE FOR THE FIXTURE OR DEVICE USED AT THE OUTLET, AND SHALL FINISH FLUSH WITH PLASTER OR OTHER FINISHED SURFACE. APPROVED FACTORY MADE KNOCKOUT SEALS SHALL BE USED IN ALL BOXES WHERE KNOCKOUTS ARE NOT INTACT. BOXES IN CONCRETE SHALL BE A TYPE, WHICH WILL ALLOW THE PLACING OF CONDUIT WITHOUT DISPLACING THE REINFORCING
- 6. OUTLET BOXES SHALL BE USED AS PULL BOXES WHEREVER POSSIBLE, AND JUNCTION OR PULL BOXES SHALL BE INSTALLED ONLY AS REQUIRED BY THE SPECIFICATIONS, OR AS DIRECTED.
- 7. FOR LIGHT OUTLET BOXES USE MINIMUM OF 4" SQUARE, 1_1/2" DEEP, EQUIPPED WITH PLASTER RING AND FIXTURE SUPPORTING DEVICE AS REQUIRED BY THE UNIT.
- 8. FOR WALL SWITCH OUTLETS, USE 4" BOXES WITH SINGLE OR TWO GANG PLASTER RINGS FOR ONE OR TWO SWITCHES AND SOLID GANG BOXES WITH GANG PLASTER RINGS FOR MORE THAN TWO SWITCHES, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- 9. FOR CONVENIENCE OUTLETS, USE 4" BOXES WITH SINGLE GANG PLASTER RING.
- 10. FOR TELEPHONE OUTLETS, USE 4" BOXES WITH SINGLE GANG PLASTER RING.

3.06 WIRE INSTALLATION

A. CLEANING: ALL DEBRIS AND MOISTURE SHALL BE REMOVED FROM RACEWAYS, BOXES, AND CABINETS BEFORE INSTALLING WIRE OR CABLE.

B. PULLING:

- 1. NO OIL, GREASE OR SIMILAR SUBSTANCES SHALL BE USED TO FACILITATE THE PULLING IN OF CONDUCTORS. USE A UL APPROVED WIRE PULLING COMPOUND.
- 2. NO WIRE OR CABLE SHALL BE PULLED IN UNTIL ALL CONSTRUCTION, WHICH MIGHT DAWAGE INSULATION OR FILL CONDUIT WITH FOREIGN MATERIAL IS COMPLETED.
- 3. WIRE SHALL BE PULLED INTO CONDUITS WITH CARE TO PREVENT DAMAGE TO INSULATION. USE BASKET PULLING GRIPS TO AVOID SLIPPING OF INSULATION ON CONDUCTORS. NYLON ROPE OR OTHER "SOFT" SURFACE CABLE MUST BE USED FOR PULLING IN CONDUITS OTHER THAN STEEL.

C. CONNECTIONS:

- 1. STRANDED CONDUCTORS NO. 8 AND SMALLER SHALL BE TERMINATED WITH TERMINALS OF APPROPRIATE SIZE WHERE CONNECTED TO SCREW TYPE LUGS.
- 2. JOINTS, SPLICES AND TAPS IN DRY LOCATIONS FOR CONDUCTORS NO. 8 AND SMALLER SHALL BE MADE WITH TWIST ON CONNECTORS SUITABLY SIZED FOR THE NUMBER AND GAUGE OF THE CONDUCTORS.
- 3. FURNISH AND INSTALL PROPER LUGS IN ALL PANELBOARDS, SWITCHBOARDS, AND GUTTERS AS REQUIRED TO PROPERLY TERMINATE EVERY CABLE. LUGS FOR ALUMINUM CONDUCTORS SHALL BE COMPRESSION TYPE.
- 4. CONNECTIONS OF ALUMINUM CABLE TO ALUMINUM BUS BARS SHALL BE MADE USING ALL ALUMINUM COMPONENTS (LUGS, WASHER, BOLTS, NUTS). COPPER TO ALUMINUM CONNECTIONS OF BUS BARS AND LUGS SHALL BE MADE USING BELLEVILLE WASHERS AND FLAT WASHERS TO COMPENSATE FOR DIFFERING RATES OF THERMAL EXPANSION.
- 5. ONLY CRIMPING TOOLS APPROVED BY THE MANUFACTURER OF THE TERMINALS OR LUGS SHALL BE USED.
- 6. UNINSULATED LUGS AND WIRE ENDS SHALL BE INSULATED WITH LAYERS OF PLASTIC TAPE EQUAL TO INSULATION OF WIRE, WITH ALL IRREGULAR SURFACES PROPERLY PADDED WITH INSULATING PUTTY PRIOR TO APPLICATION OF TAPE.
- 7. SPLICES IN UNDERGROUND PULL BOXES OR IN OTHER AREAS SUBJECT TO MOISTURE SHALL BE PROVIDED WITH CAST RESIN KITS. PREPARE ALL SPLICES AS HEREINBEFORE SPECIFIED BEFORE RESIN KITS ARE APPLIED.

3.07 LIGHTING FIXTURE INSTALLATION

A MOLINTING:

1. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL LIGHTING FIXTURES SHALL BE PLACED SYMMETRICALLY WITH RESPECT TO THE CEILING TILE PATTERN, OR OTHER ARCHITECTURAL CEILING, AND WALL MODULES.

B. SUPPORT:

- 1. IN SUSPENDED GRID LAY_IN CEILINGS, IN ADDITION TO SUPPORTING FROM CEILING TEES, SUPPORT ALL LUMINAIRE HOUSINGS FROM STRUCTURAL MEMBERS WITH A MINIMUM OF FOUR NO.12 GALVANIZED WIRES FOR EACH LUMINAIRE.
- 2. ALL FIXTURE MOUNTING SHALL MEET SEISMIC REQUIREMENTS OF THE STATE OF CALIFORNIA.
- 3. PROVIDE SUPPORT FOR ALL FIXTURES FROM (OR ON) BUILDING STRUCTURAL WALL MEMBERS. SUPPORT FROM CEILING TILES ONLY IS SPECIFICALLY PROHIBITED.

C. FIRE PROTECTION:

- 1. ALL RECESSED FIXTURES SHALL BE PROTECTED FROM CONTACT WITH COMBUSTIBLE BUILDING MATERIALS, SUCH AS WOOD FRAMING MEMBERS AND INSULATION VAPOR BARRIERS, AS REQUIRED BY APPLICABLE CODES.
- 2. FIXTURES INSTALLED IN RATED 1—HOUR CEILINGS SHALL BE ENCASED BY A 1—HOUR ENCLOSURE TO MAINTAIN THE FIRE INTEGRITY OF THE CEILING. ALL FIXTURE ENCLOSURES WILL COMPLY WITH UL FIRE RESISTANCE DIRECTORY DESIGN REQUIREMENTS.
- D. CLEANING UP: ALL FIXTURES SHALL BE LEFT IN A CLEAN CONDITION, FREE OF DIRT AND DEFECTS, BEFORE ACCEPTANCE BY THE OWNER.

3.08 RECEPTACLE INSTALLATION

A. ALL RECEPTACLES IN FLUSH TYPE OUTLET BOXES SHALL BE INSTALLED WITH A BONDING JUMPER FOR GROUND BETWEEN THE GROUNDED OUTLET BOX AND THE RECEPTACLE GROUND TERMINAL, EXCEPT WHERE RECEPTACLE IS EQUIPPED WITH A UL APPROVED SELF-GROUNDING DEVICE. GROUNDING THROUGH THE RECEPTACLE MOUNTING STRAPS IS NOT ACCEPTABLE. BONDING JUMPER SHALL BE ATTACHED AT EACH OUTLET TO THE BACK OF THE BOX USING DRILLED AND TAPED HOLES AND WASHED HEAD SCREWS 6/32" OR LARGER. FOR RECEPTACLES IN SURFACE MOUNTED OUTLET BOXES DIRECT METAL TO METAL CONTACT BETWEEN RECEPTACLE MOUNTING STRAP (IF IT IS CONNECTED TO THE GROUNDING CONTACTS) AND OUTLET BOX MAY BE USED.

3.09 TERMINAL CABINET INSTALLATION

- A. CABINETS ARE TO BE INSTALLED PLUMB AND RIGIDLY SECURED TO STRUCTURE WITH WOOD SCREWS, BOLTS AND CONCRETE ANCHORS, OR MACHINE BOLTS AND LOCKNUTS AS APPLICABLE.
- B. RECESSED CABINETS SHALL HAVE COVERS FLUSH WITH THE WALL. WHERE BUILDING CONSTRUCTION IS FIRE RATED, ENCLOSE RECESSED CABINET IN 5/8" GYPSUM BOARD AS DIRECTED BY THE ARCHITECT.
- C. INSTALL (2) 1" EMPTY CONDUITS FROM ALL RECESSED CABINETS TO ACCESSIBLE SPACE ABOVE CEILINGS AND/OR BELOW FLOOR AS APPLICABLE (4 CONDUITS IF BOTH CAVITIES EXIST). IDENTIFY THE EMPTY CONDUITS.
- D. COORDINATE FRAMING REQUIREMENTS WITH OTHERS TO ACCOMMODATE CABINET LOCATIONS WITHOUT REQUIRING FRAMING MEMBERS TO BE CUT AWAY FOR INSTALLATION. PROVIDE ADEQUATE BLOCKING FOR SURFACE MOUNTED CABINETS AS APPLICABLE.
- E. FOR CONTROL EQUIPMENT CABINETS, A DRAWING OF THE CONTROL SCHEME SHALL BE PLACED IN THE DOOR RACK PROVIDED.
- F. ALL CONDUCTORS ENTERING OR LEAVING THE CABINET SHALL BE TERMINATED ON TERMINAL STRIPS OR PUNCH BLOCKS. EACH TERMINAL POINT SHALL BE LABELED, AND ALL WIRES WITHIN THE ENCLOSURE SHALL BE IDENTIFIED WITH BRADY OMNI-GRIP WIRE MARKERS OR OTHER SIMILAR METHOD.
- G. WIRES SHALL BE NEATLY ARRANGED WITHIN THE CABINET AND SECURED WITH TY-RAP OR RUN IN PANDUIT WIRE WAYS AS REQUIRED OR AS INDICATED ON THE DRAWINGS.

3.10 GROUNDING AND BONDING

- A. THE ENTIRE ELECTRICAL RACEWAY SYSTEM SHALL FORM A CONTINUOUS METALLIC ELECTRICAL CONDUCTOR FROM SERVICE POINT TO EVERY OUTLET AND SHALL BE GROUNDED BY CONNECTION TO THE MAIN SERVICE GROUND.
- B. A GROUND WIRE SHALL BE INSTALLED IN ALL PVC AND FLEXIBLE CONDUIT.
- C. ALL RACEWAY SYSTEMS, SUPPORTS, CABINETS, SWITCHBOARDS, CONTROL EQUIPMENT, MOTOR FRAMES, LIGHTING FIXTURES, AND UTILIZATION APPARATUS SHALL BE PERMANENTLY AND EFFECTIVELY GROUNDED.
- D. WHERE CABINETS ARE FURNISHED WITH GROUNDING BUS, ALL REQUIRED BONDING CONDUCTORS SHALL CONNECT THERETO, EACH WITH A SEPARATE LUG.
- E. ALL GROUNDING CONDUCTORS ARE TO BE COPPER ONLY. ALUMINUM WILL NOT BE ALLOWED.

3.11 TESTS

- A. UPON COMPLETION OF THE WORK AND ADJUSTMENTS OF ALL EQUIPMENT, ALL SYSTEMS SHALL BE TESTED TO DEMONSTRATE THAT ALL EQUIPMENT FURNISHED, INSTALLED, AND/OR CONNECTED UNDER THE PROVISIONS OF THESE SPECIFICATIONS SHALL FUNCTION IN THE REQUIRED MANNER.
- B. ALL SYSTEMS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS, AND BE FREE FROM MECHANICAL AND ELECTRICAL DEFECTS. ALL CIRCUITS SHALL BE TESTED FOR THE PROPER NEUTRAL CONNECTION, AND ROTATION OF MOTORS.
- C. WHERE TESTS INDICATE FAULTY INSTALLATION OR OTHER DEFECTS, THEY SHALL BE LOCATED, REPAIRED, AND RETESTED AT THE CONTRACTOR'S EXPENSE.



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MEP & FS / Sustainability / C:

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Roseville, CA 95678
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CONSULTING
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Exp. 9/30/24

1875 W. Lowell Avenue

Tracy, CA 95376

Tracy High School Tennis Cour Repairs

315 E. 11th Street Tracy, CA 95376

	REVISIONS
NO.	DESCRIPTION

DRAWN:

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AS NOTED

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22-054

DESIGNED:

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11-11-2022

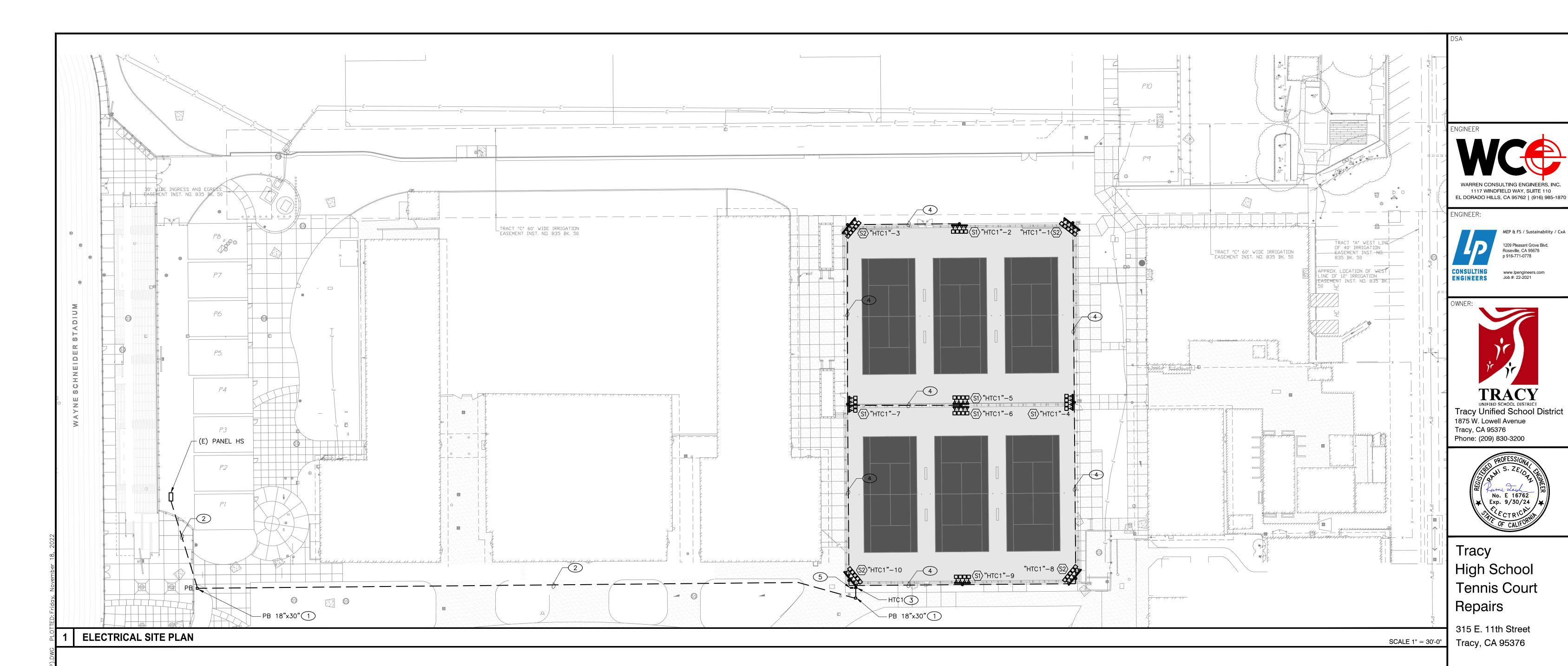
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ELECTRICAL
SPECIFICATIONS

EET NO.



	LIGHTING FIXTURE SCHEDULE - SPORTS LIGHTING										
TYPE	MANUFACTURER & CATALOG NUMBER	LAMP (CROSS SECTION)	VOLTS / VA	MOUNTING	REMARKS						
S1	COOPER LIGHTING EPH-VN-04-E-LV-LCF-YOKE-760-T4FT-AMS-A05-NN-ST	59158 LUMEN	277V / 532.7VA	POLE	EPHESUS LUMAVISION WHITE LED SPORTS & ENTERTAINMENT LUMINAIRE TENNIS COURTS. @30' AFF, WITH 4 LIGHT SQUARES.						
S2	COOPER LIGHTING EPH-VN-06-E-LV-LCF-YOKE-760-T4FT-AMS-A05-NN-ST	59158 LUMEN	277V / 532.7VA	POLE	EPHESUS LUMAVISION WHITE LED SPORTS & ENTERTAINMENT LUMINAIRE TENNIS COURTS. @30' AFF, WITH 5 LIGHT SQUARES.						

LIGHTING FIXTURE NOTES:

1. COORDINATE LUMINAIRE FINISH WITH ARCHITECT (TYPICAL). 2. ALL BALLASTS SHALL BE C.E.C. CERTIFIED.

KEY NOTES

- 1. PROVIDE UNDERGROUND ELECTRICAL PULL BOX, TRAFFIC RATED, BOLT-ON REINFORCED LID AND "ELECTRICAL" ENGRAVED ON LID. SEE 4/E7.1 FOR TYPICAL PULL BOX DETAIL.
- 2. PROVIDE UNDERGROUND CONDUITS AND CONDUCTORS FOR TENNIS COURT LIGHTING PANEL "HTC1". PROVIDE 2"C W/4#1 AWG CU + 1# 8 AWG CU GND SEE 1/E7.1 FOR TÝPIČAL TRENCH DETÄIL.
- 3. PROVIDE OUTDOOR RATED PANEL "HTC1" SEE SHEET E6.1 FOR PANEL SCHEDULE.
- 4. PROVIDE UNDERGROUND CONDUITS AND CONDUCTORS FOR LIGHTING. PROVIDE 1 1/2" C W/2#8 AWG CU + 1# 8 AWG CU GND SEE 1/E7.1 FOR TYPICAL TRENCH DETAIL.
- 5. AIRMESH HUB CONTROL BOX AND SPORT LIGHTS CONTACTORS CABINET, INSTALL AND COMPLETE THE LIGHTING CONTROLS CONNECTION PER MANUFACTURER RECOMMENDATION. SEE SHEET E7.1 FOR CONTROL DIAGRAM.

GENERAL NOTES

- 1. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORKS, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
- 2. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.

REVISIONS DESCRIPTION

SCALE: DRAWN:

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SSUANCE:

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SHEET TITLE:

ELECTRICAL SITE PLAN

E1.1

	277/400	Volt 2 Dhace 4 Wire			191140	J PAN	IEL "H	13			E KAIC Det	4:.
	600 600	Volt, 3 Phase, 4 Wire Amp BUS CU. Amp MCB Amp MLO								FREESTANDING NEMA		
				F	PHASE S	UMMAR)	Y (WATTS)]		
CKT.	BKR	DESCRIPTION	Α	В	С		Α	В	С	DESCRIPTION	BKR]
1	[E] 225/3	(E) PANEL-HS1	35,667				8,000			(E) ELUI	[E] 40/1	
3	ī	-		35,667						(E) SPARE	[E] 20/1	
5	-	-			35,667				5,000	(E) POWER PEDESTAL	[E] 30/2	
7	[N][1] 100/3	(N) PANEL HTC1	9,589				5,000			-	-	
9				9,056						SPACE	PFB	
11	-				4,262					SPACE	PFB	
13	[E] 225/3	(E) PANEL-HS1A	35,667							SPACE	PFB	
15)	1		35,667						SPACE	PFB	
17	-	-			35,667					SPACE	PFB	
19	[E] 250/3	(E) TRANSFORMER-TDP1	50,000							SPACE	PFB	
21	-	1		50,000						SPACE	PFB	
23	ī	-			50,000					SPACE	PFB	
					PH	ASE TOT	ALS					
					A 143,923	B 130,390	C 130,596					
	PANEL AND	CIRCUIT BREAKER NOTES:						•		DEMAND LOADS		_
[1]	PROVIDE N	EW CIRCUIT BREAKER IN SPAC	CES FOR NE	EW CIR	CUIT.				LIGHTII	NG / CONTINUOUS LOAD x 125%	28,633	3
								RECEF	PTACLES / OTHER x 100%	382,002)	
									LARGE	ST MOTOR x 25%		_
									TOTAL	DEMAND LOADS	410,635	j
									TOTAL	DEMAND AMPS	494	1

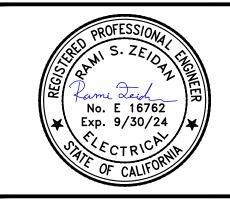
				NE	W PA	ANEL	."HT	C1"				
2		Volt, 3 Phase, 4 Wire								10 SURFACE	KAIC Ra	_
		Amp BUS CU. Amp MCB								NEMA 3R		1
		Amp MLO										
				PH	HASE SI	UMMAR	Y (WAT	TS)				
CKT.	BKR	DESCRIPTION	Α	В	С]	Α	В	С	DESCRIPTION	BKR	CKT.
1	20/1	TENNIS COURT SPORTS LIGHTS	2,664]	2,131			TENNIS COURT SPORTS LIGHTS	20/1	2
3	20/1	TENNIS COURT SPORTS LIGHTS		2,664				2,131		TENNIS COURT SPORTS LIGHTS	20/1	4
5	20/1	TENNIS COURT SPORTS LIGHTS			2,131				2,131	TENNIS COURT SPORTS LIGHTS	20/1	6
7	20/1	TENNIS COURT SPORTS LIGHTS	2,131				2,664			TENNIS COURT SPORTS LIGHTS	20/1	8
9	20/1	TENNIS COURT SPORTS LIGHTS		2,131				2,664		TENNIS COURT SPORTS LIGHTS	20/1	10
11	20/1	SPARE								SPARE	20/1	12
13	20/1	SPARE								SPARE	20/1	14
15	PFB	SPACE				1				SPACE	PFB	16
17	PFB	SPACE				1				SPACE	PFB	18
			_		PHA	SE TO	TALS					
					Α	В	С	1				
					9,589	9,589	4,262	1				
	PANEL	AND CIRCUIT BREAKER NOTES:								DEMAND LOADS		
[1]									LIGHTIN	NG / CONTINUOUS LOAD x 125%	29,299	Watt
									RECEP	TACLES / OTHER x 100%		Watt
[2]									LARGE	ST MOTOR x 25%		Watts
									TOTAL	DEMAND LOADS	29,299	Watt
										DEMAND AMPS	200	AMPS







TRACY
UNIFIED SCHOOL DISTRICT
Tracy Unified School District
1875 W. Lowell Avenue
Tracy, CA 95376
Phone: (200) 830, 3300 Phone: (209) 830-3200



Tracy High School Tennis Court Repairs

315 E. 11th Street Tracy, CA 95376

NO.		DESCRIPTION		
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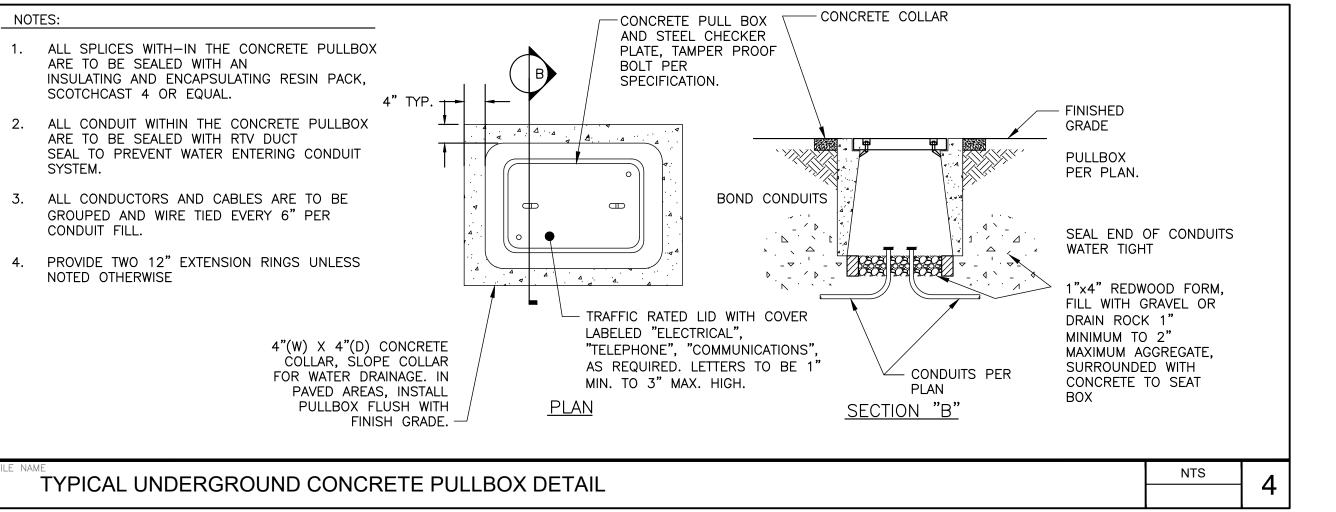
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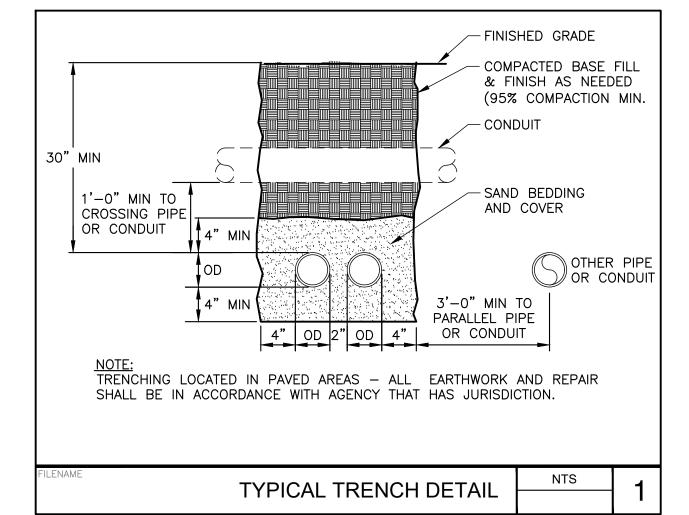
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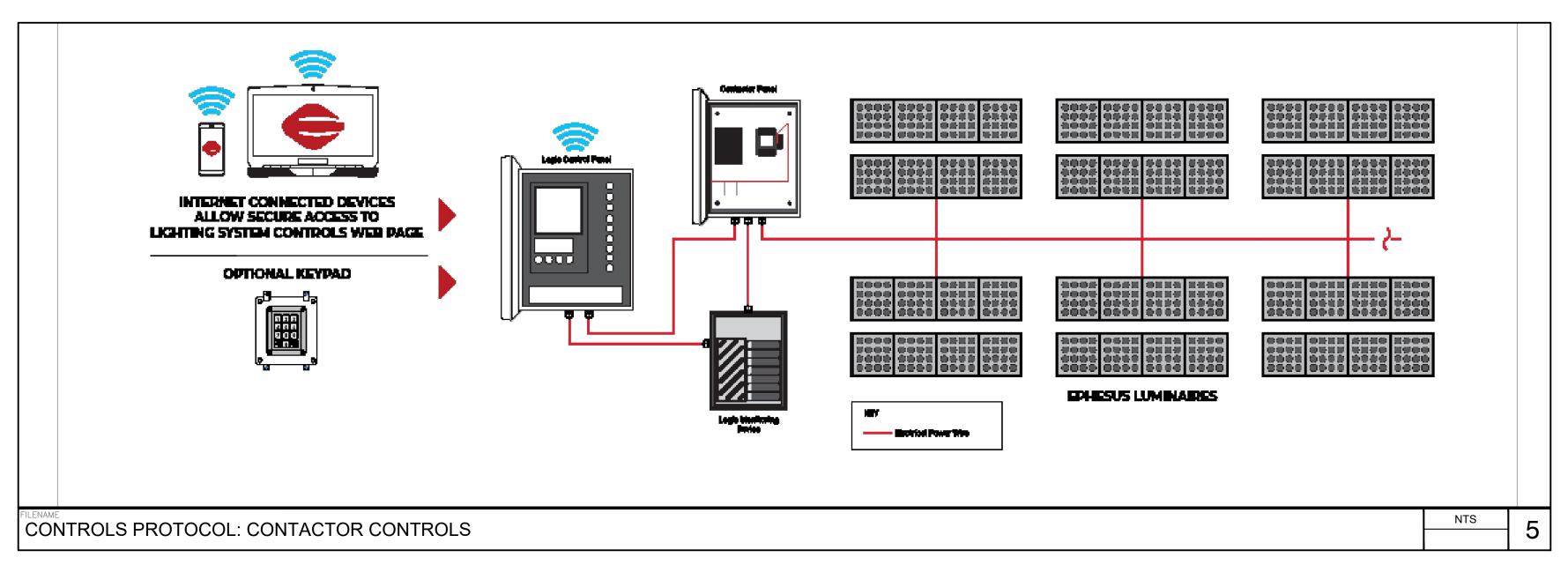
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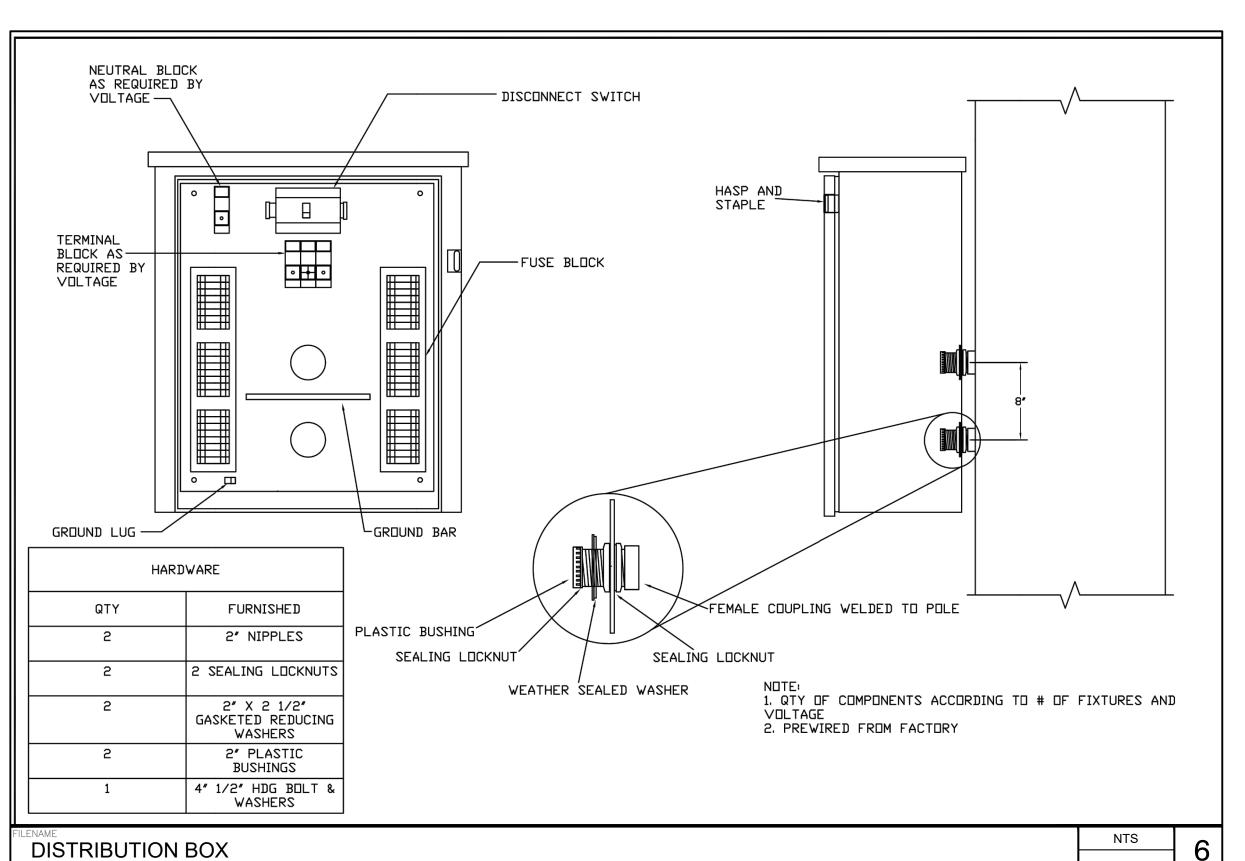
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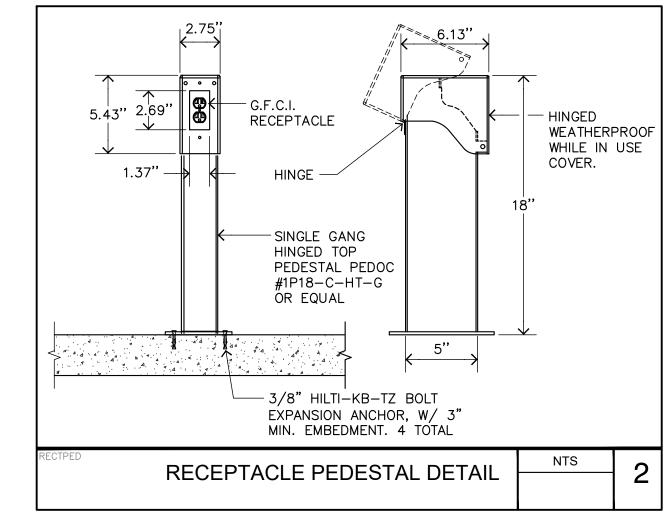
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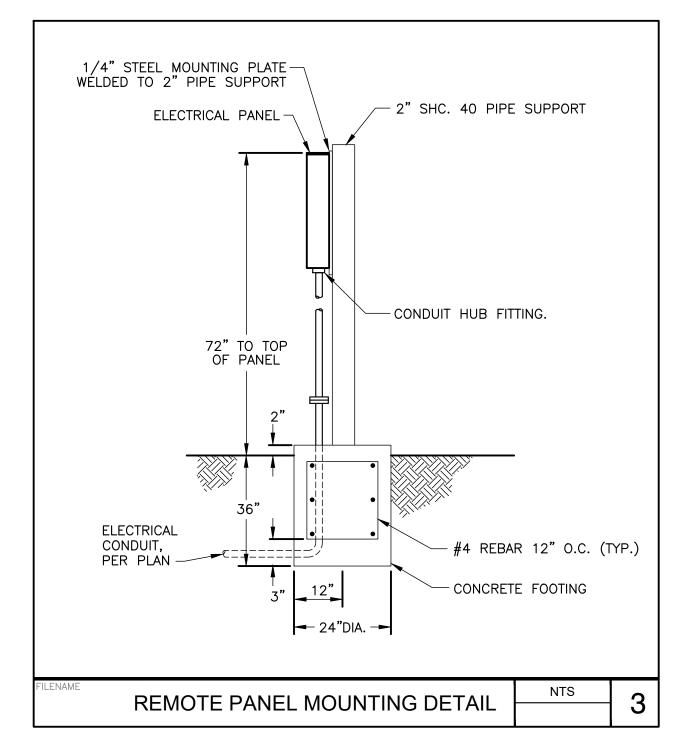








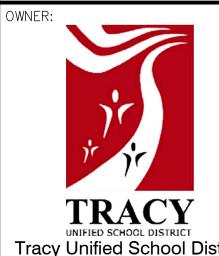






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Tracy Unified School District 1875 W. Lowell Avenue Tracy, CA 95376 Phone: (209) 830-3200



Tracy High School **Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

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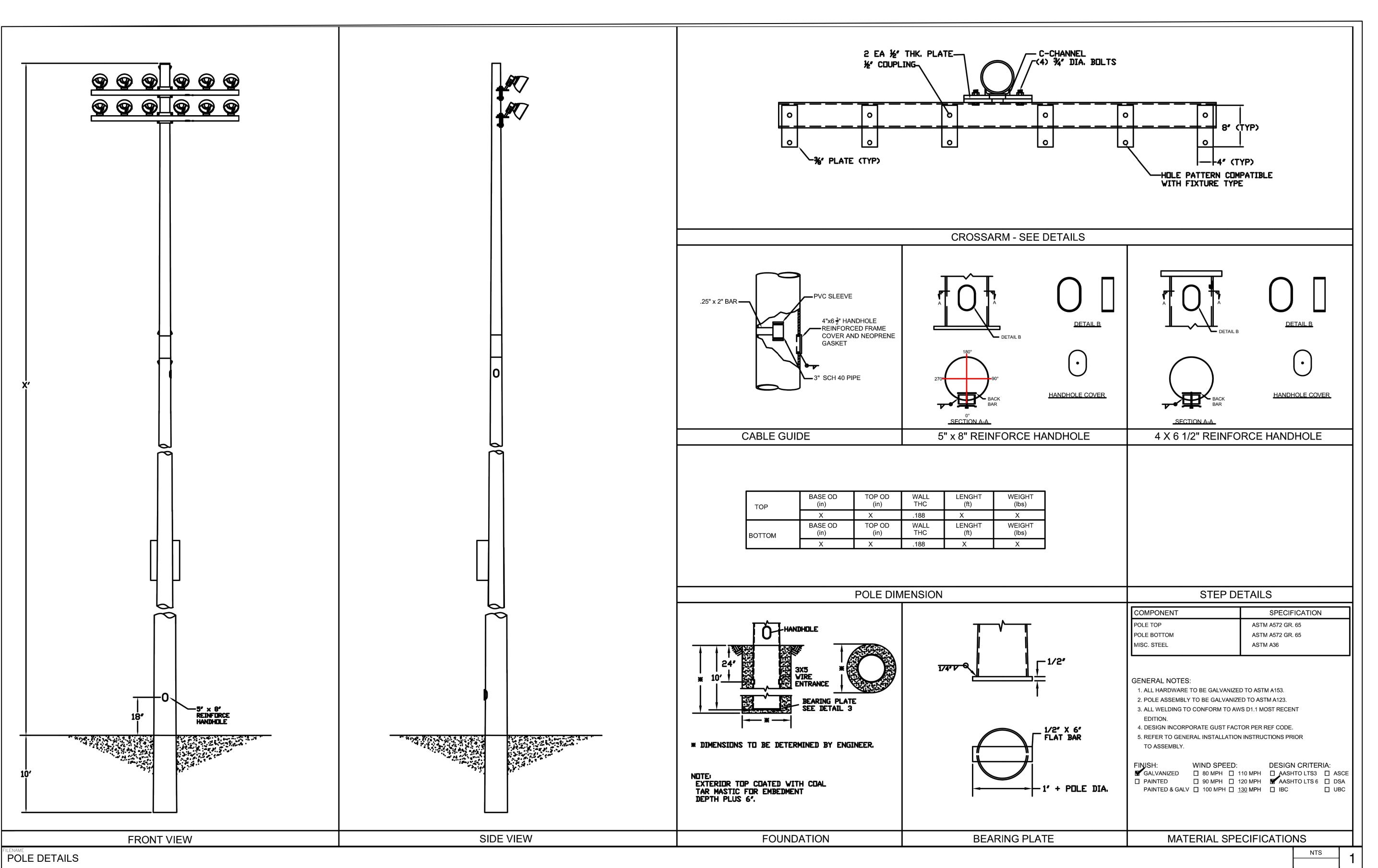
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E7.1

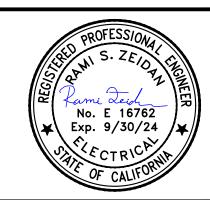


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Tracy High School **Tennis Court** Repairs

315 E. 11th Street Tracy, CA 95376

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ELECTRICAL **DETAILS**

E7.2