SHEET #	SHEET NAME	
<u>GENERAL</u> G-001	COVER SHEET	
ASD-101 ASD-102 ASP-101 ASP-101 ASP-102	<u>TURAL SITE</u> DEMOLISTION SITE PLAN - OVERALL ENLARGED DEMOLITION PLANS SITE PLAN - OVERALL ENLARGED SITE PLANS	
C-001 C-100 C-101 C-102 C-103 C-104 C-105 C-106 C-107 C-108 C-109	EXISTING SURVEY SITE PLAN DEMOLITION PLAN NOTES & QUANTITIES TYPICAL SECTIONS AND DETAILS GRADING & PAVING PLAN SOIL EROSION CONTROL PLAN UTILITY PLAN & PROFILES JOINT LAYOUT PLAN ROADWAY & PARKING LOT STRIPING RETAINING WALL DETAILS	
LANDSCAI L-001 L-101 L-102 L-103 L-104 L-201 L-301	PING SPECIFICATIONS PLANTING SITE PLAN PLANTING ENLARGEMENT PLANTING ENLARGEMENT TOPSOIL PLAN IRRIGATION PLAN TREE EVALUATION PLAN	
<u>STRUCTUR</u> S-101	<u>RAL</u> STRUCTURAL DETAILS	-
ELECTRIC E-001 E-002 E-003 E-004 E-005 E-006 E-101	AL ELECTRICAL SYMBOLS LIST AND GENERAL NOTES ELECTRICAL FIXTURE SCHEDULE, KEYNOTE AND DETAILS ELECTRICAL SPECIFICATIONS ELECTRICAL SPECIFICATIONS ELECTRICAL SPECIFICATIONS ELECTRICAL SPECIFICATIONS ELECTRICAL LIGHTING PLAN	
SIGNAGE X-0.0 X-1.0 X-1.1 X-2.0 X-2.1 X-2.2 X-2.3 X-2.4 X-2.5 X-2.6 X-0.0 X-1.0 X-1.0 X-1.0 X-1.1 X-2.0 X-2.1 X-2.2 X-2.3 X-2.4 X-2.5 X-2.5 X-2.6	50' COVER SHEET (VERTICAL) 50' GUITAR PYLON OVERALL (VERTICAL) 50' GUITAR PYLON OVERALL (TILTED) 50' GUITAR PYLON - NECK DETAIL SHEET 50' GUITAR BODY - DETAIL SHEET 50' GUITAR PYLON - PEDESTALL DETAIL SHEET 50' GUITAR PYLON - LOGO & DIAL DETAIL SHEET 50' GUITAR PYLON - LOGO & DIAL DETAIL SHEET 50' GUITAR PYLON - COLOR SHEET (VERTICAL & TILTED) 50' GUITAR PYLON - COLOR SHEET (VERTICAL & TILTED) 50' GUITAR PYLON - CONCEPT RENDERS (VERTICAL & TILTED) 65' COVER SHEET (VERTICAL) 65' GUITAR PYLON OVERALL (VERTICAL) 65' GUITAR PYLON OVERALL (TILTED) 65' GUITAR PYLON - NECK DETAIL SHEET 65' GUITAR PYLON - NECK DETAIL SHEET 65' GUITAR PYLON - PEDESTALL DETAIL SHEET 65' GUITAR PYLON - PEDESTALL DETAIL SHEET 65' GUITAR PYLON - LOGO & DIAL DETAIL SHEET 65' GUITAR PYLON - COLOR SHEET (VERTICAL & TILTED) 65' GUITAR PYLON - COLOR SHEET (VERTICAL & TILTED) 65' GUITAR PYLON - COLOR SHEET (VERTICAL & TILTED) 65' GUITAR PYLON - COLOR SHEET (VERTICAL & TILTED)	

65' GUITAR PYLON - CONCEPT RENDERS (VERTICAL & TILTED)

Architect of Record

X-2.6

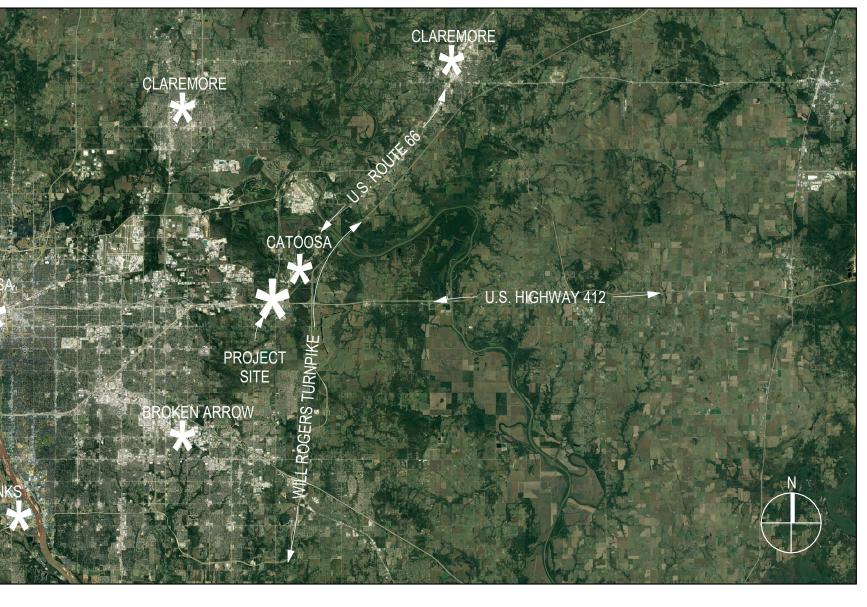
Surveying & Mapping

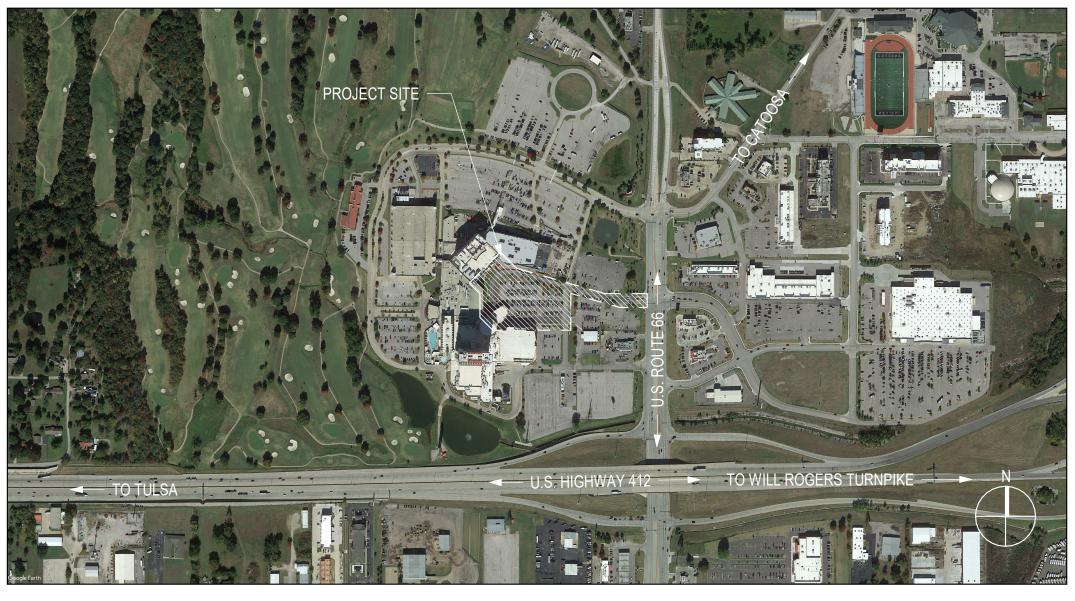
Edmondson Flynn Group, Inc. 15 West 6th Avenue Suite 2100 Tulsa, Oklahoma 74119 918-576-6700

Native Plains, Inc. 5807 S. Garnett Rd. Suite. K Tulsa, OK 74146 918-576-6700

CHEROKEE HARD ROCK CASINO EXTERIOR RENOVATION PHASES II & III **GUITAR PICK PLAZA**







Geotechnical & Testing

Building & Earth, Inc. 1403 S 70th East Ave Tulsa, OK 74112 918-439-9005

Civil Engineering

RK & Associates, Inc. 4815 So. Harvard Ave Suite 290 Tulsa, OK 74135 918-277-4784

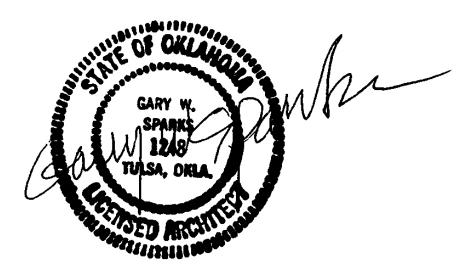
Landscape Design

Howell & Vancuren, Inc. 601 S Lewis Ave Tulsa, OK 74104 918-592-1270

PROJECT DESCRIPTION

HARD ROCK CASINO & HOTEL HAS AN EXISTING CASINO 4 PARKING LOT LOCATED IN THE CENTER OF THE "HORSE SHOE SHAPE" OF THE CASINO FACILITIES FLOOR PLAN WITH A CONNECTING TIMBERCREST ROAD TO THE EXIT OF THE SITE ONTO U.S. ROUTE 66.

THE EXISTING PARKING LOT AND ROAD ARE TO BE DEMOLISHED, REPAIRED, AND REPLACED WITH A NEW GUITAR PICK PLAZA. THIS INCLUDES A NEW MONUMENTAL GUITAR SIGN, DESIGNED LANDSCAPING & HARDSCAPING, SIGNIFICANT REWORK OF PAVED PARKING, GRADES, DRIVES, SITE LIGHTING, AUDIO, AND SECURITY & I.T.



Structural Engineering

360 Engineering Group, Inc. 1201 E. 3RD ST. TULSA, OK 74120 918-518-1124

MEP Engineering

Phillips + Gomez, Inc. 15 W. 6th Street Suite 2510 Tulsa, OK 74119 918-625-7692

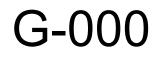


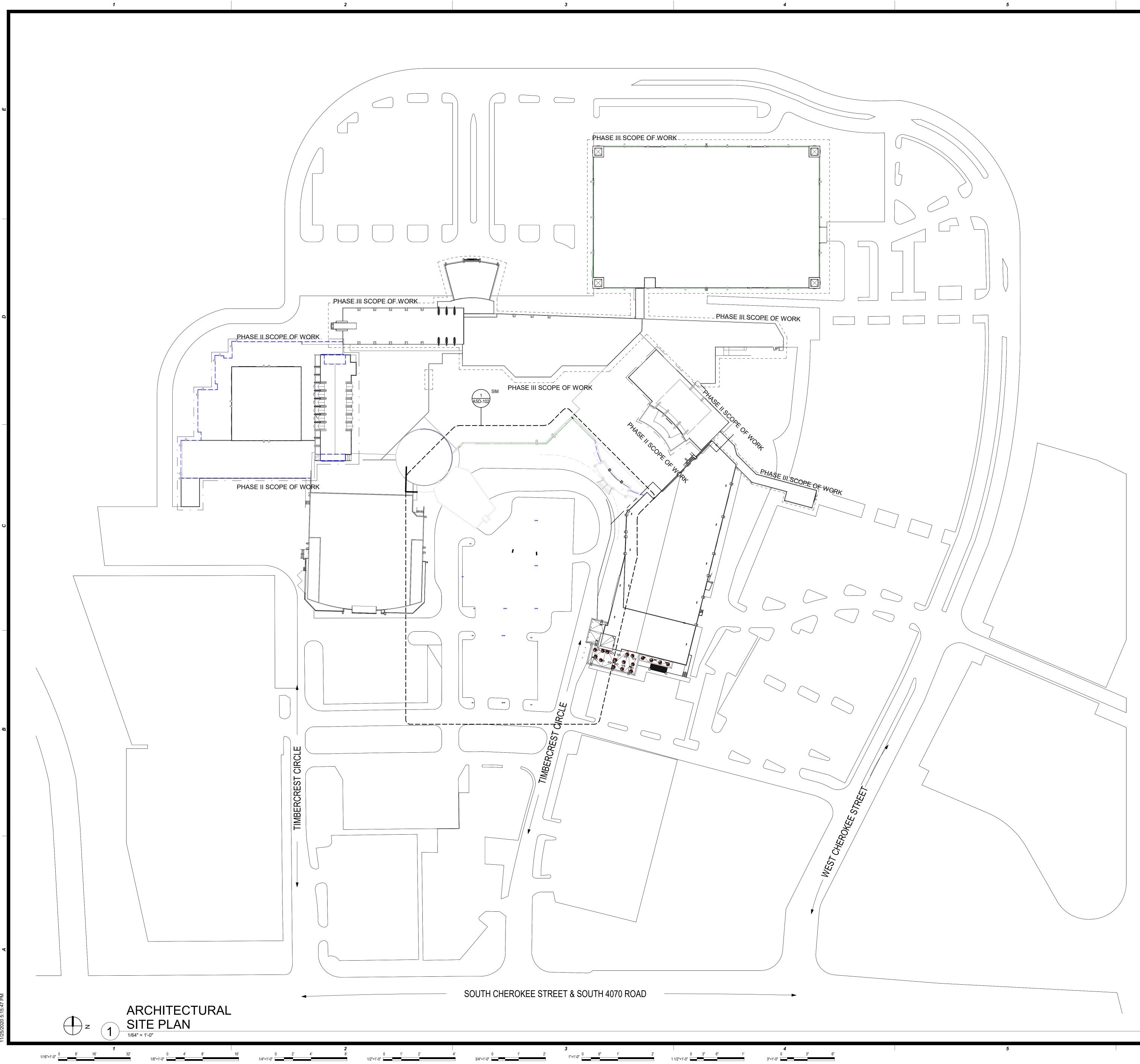


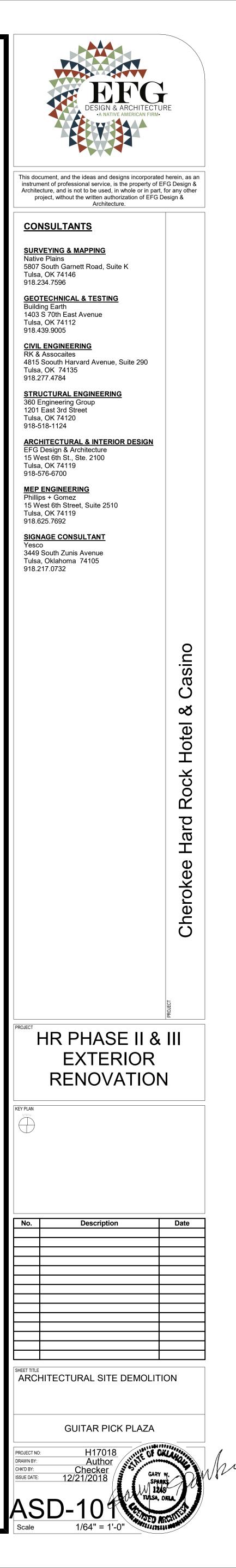
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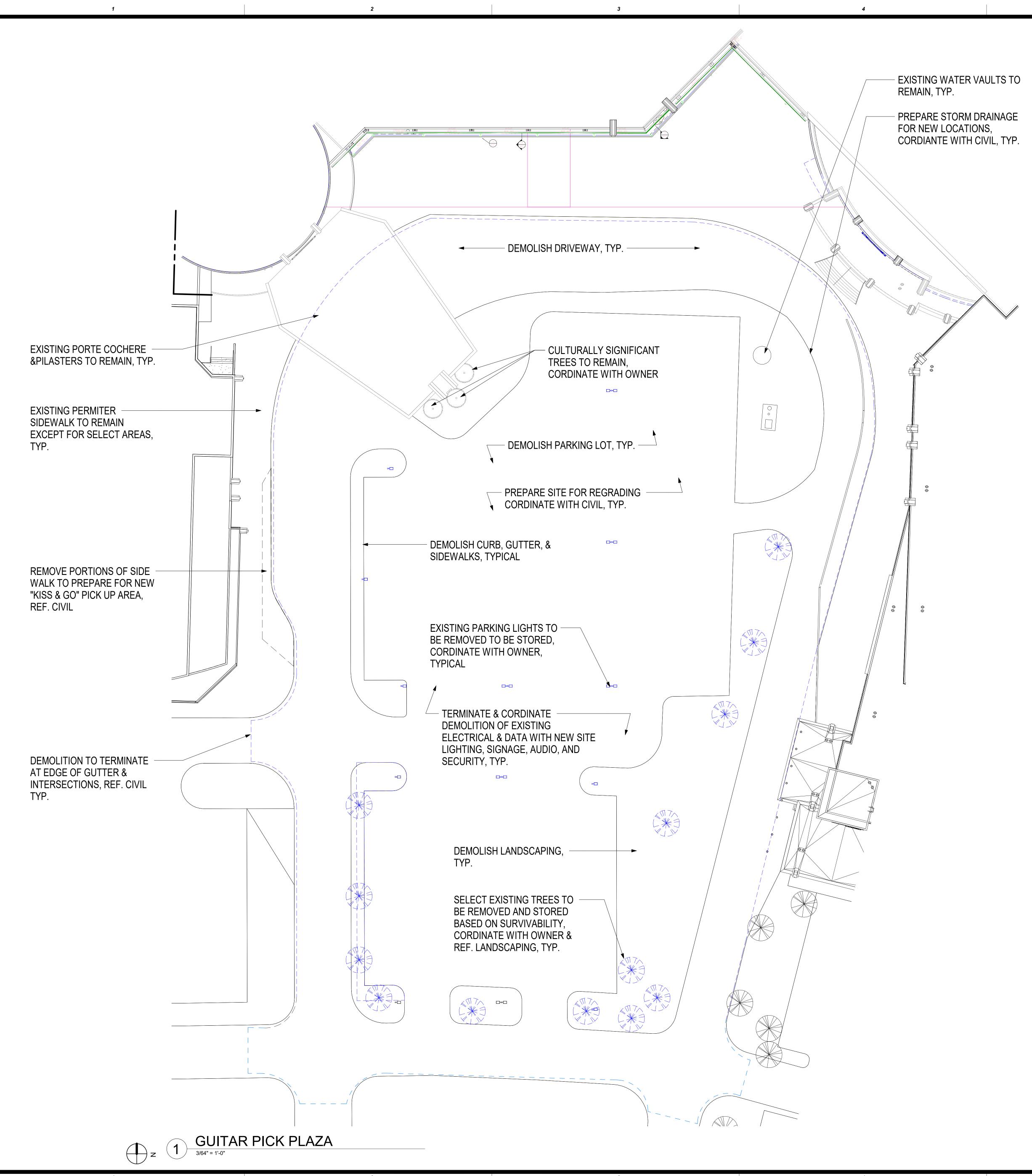
Signage Consultant

Yesco, Inc. 3449 South Zunis Avenue Tulsa, Oklahoma 74105 918-217-0732









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

 1/16"=1'-0"
 0
 4'
 8'
 16'
 0
 2'
 4'
 8'
 0
 1'
 2'

GENERAL NOTES - SITE DEMOLITION

1. PORTION OF THE BUILDING NOT IN AREAS DEFINED BY CONTRACT DOCUMENTS SHALL REMAIN OCCUPIED, OPERATIONAL, AND SECURED DURING CONSTRUCTION.

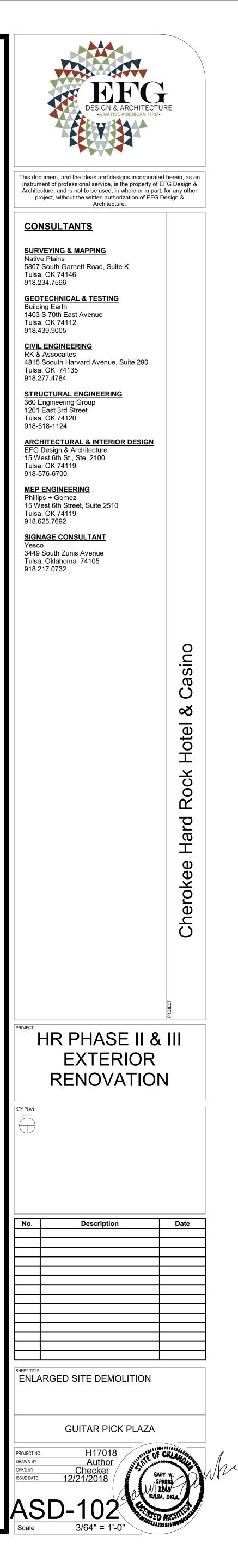
 ALL DIMENSIONS AND CONDITIONS TO BE FIELD VERIFIED.
 REQUIRED DEMOLITION SHALL NOT BE LIMITED TO THAT PORTION ON PLANS, BUT SHALL INCLUDE ALL NECESSARY WORK (OR INCIDENTAL) TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

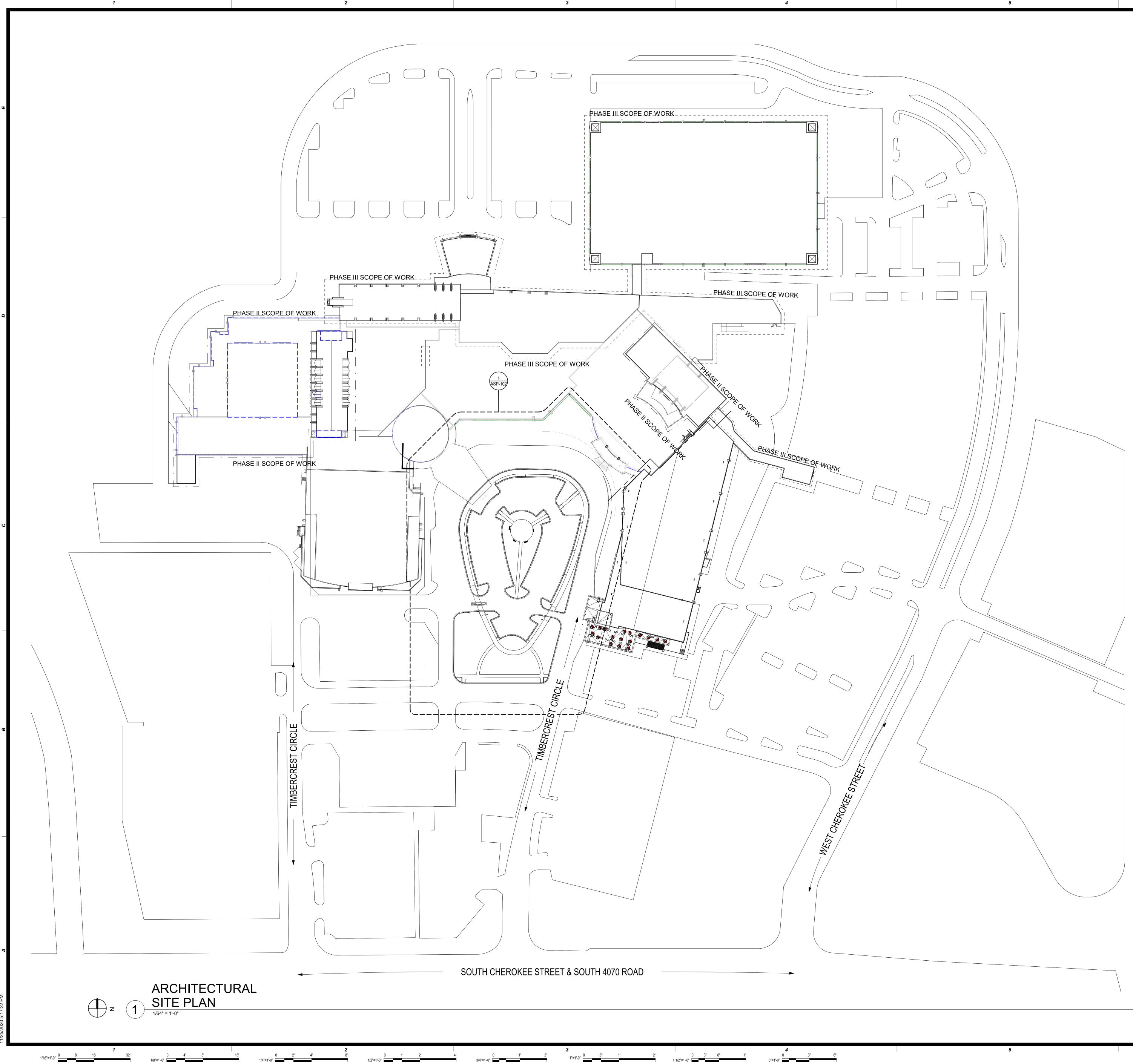
REMOVE DRIVES, SIDEWALKS, CURBS, AND GUTTERS FINISHES AS INDICATED. REMOVE WALL MOUNTED SITE LIGHTING, SIGNAGE, FIXTURES, FURNISHINGS, EQUIPMENT, ETC. AND

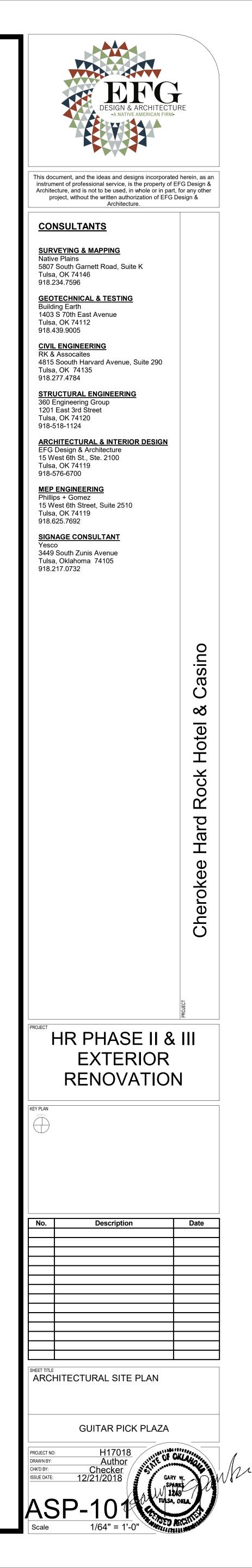
COORDINATE WITH OWNER ON ITEMS TO BE REINSTALLED. REINSTALL WHERE DIRECTED BY OWNER. STORE ITEMS AS NCESSARY FOR REINSTALLATION. PREPARE REMAINING SPACE TO RECEIVE NEW CONSTRUCTION. DATCH ALL ADDAC INCLUDING SUT NOT

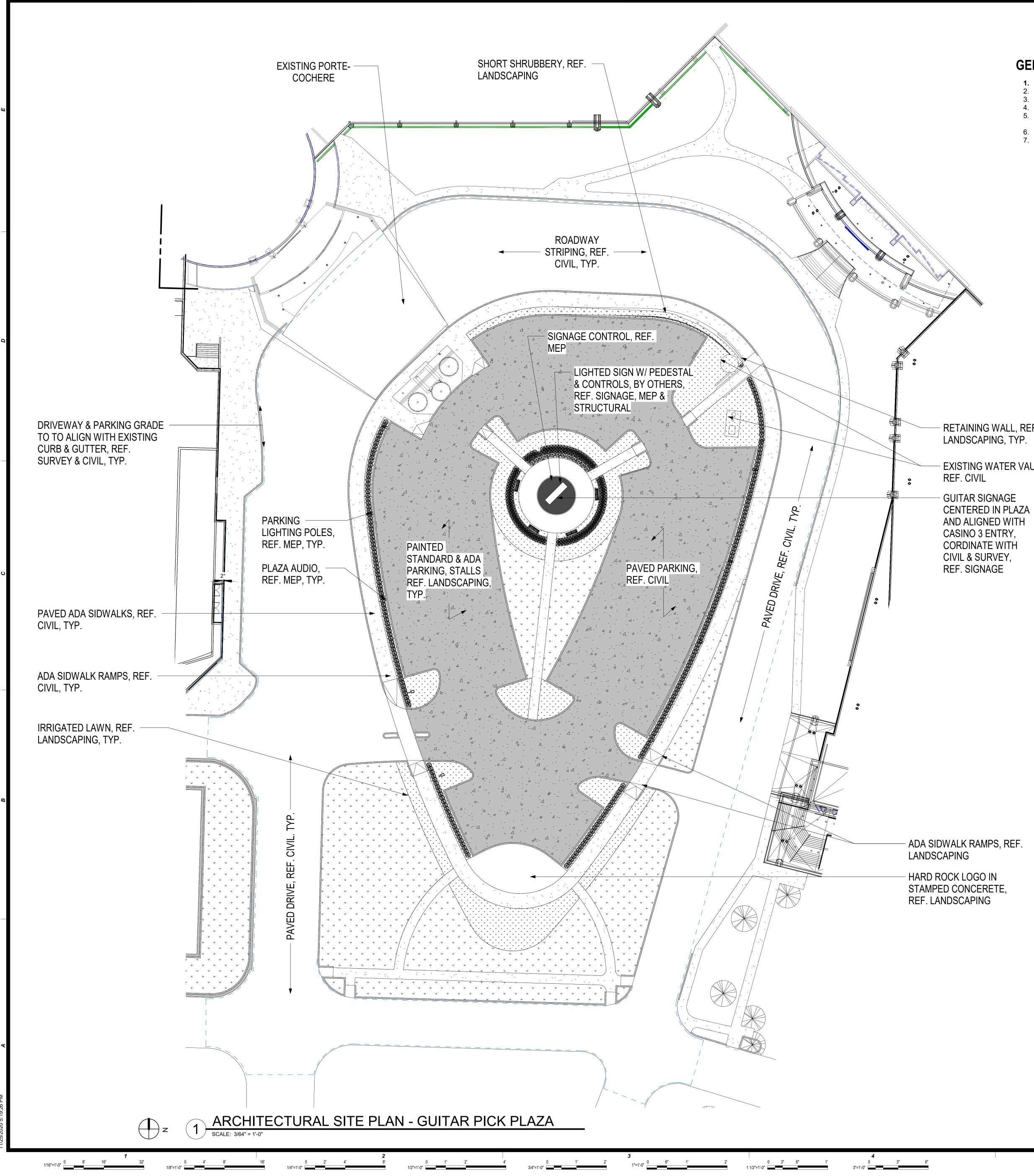
 PREPARE REMAINING SPACE TO RECEIVE NEW CONSTRUCTION. PATCH ALL AREAS INCLUDING BUT NOT LIMITED TO WALLS, AND FLOOR SLABS. ALL PATCH WORK TO MATCH EXISTING.
 PATCH AS REQUIRED TO ACCOMODATE NEW MECHANICAL, PLUMBING, AND ELECTRIC WORK. REFER TO ENGINEERING.

- 8. ALL NEW WORK TO BE CONCEALED UNLESS NOTED OTHERWISE.
- OWNER TO REMOVE ALL FREE STANDING EQUIPEMENT OR FURNISHINGS ON THE SITE.
 REMOVE PORTIONS OF SLAB NECESSARY FOR NEW CONDUITS, DRAINAGE, & PLUMBING PER MEP,
- LANDSCAPING, & CIVIL SHEETS. REPAIR AND PATCH SLAB TO BE FLUSH WITH EXISTING.
- REFER TO MEP GENERAL AND DEMOLITION NOTES FOR MAINTAINING BUILDING SYSTEMS.
 REFER TO MECHANICAL, PLUMBING AND ELECTRICAL DEMOLITION PLANS & FOR BUILDING SYSTEMS TO BE DEMOLISHED, CAPPED OR ABANDONED IN PLACE.







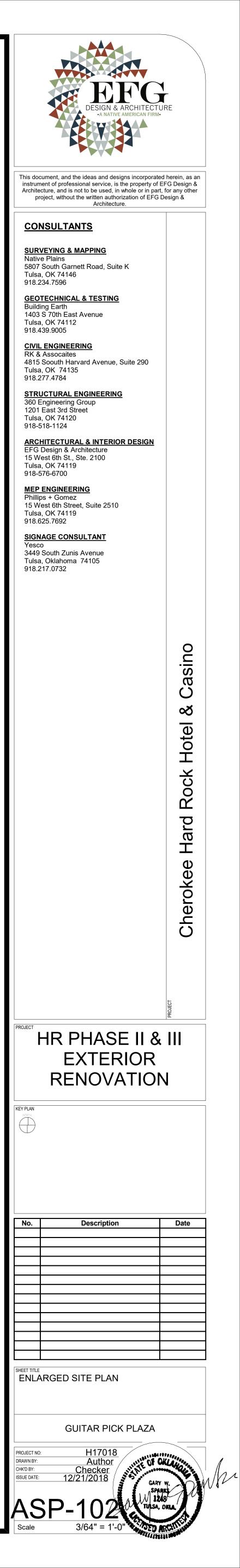


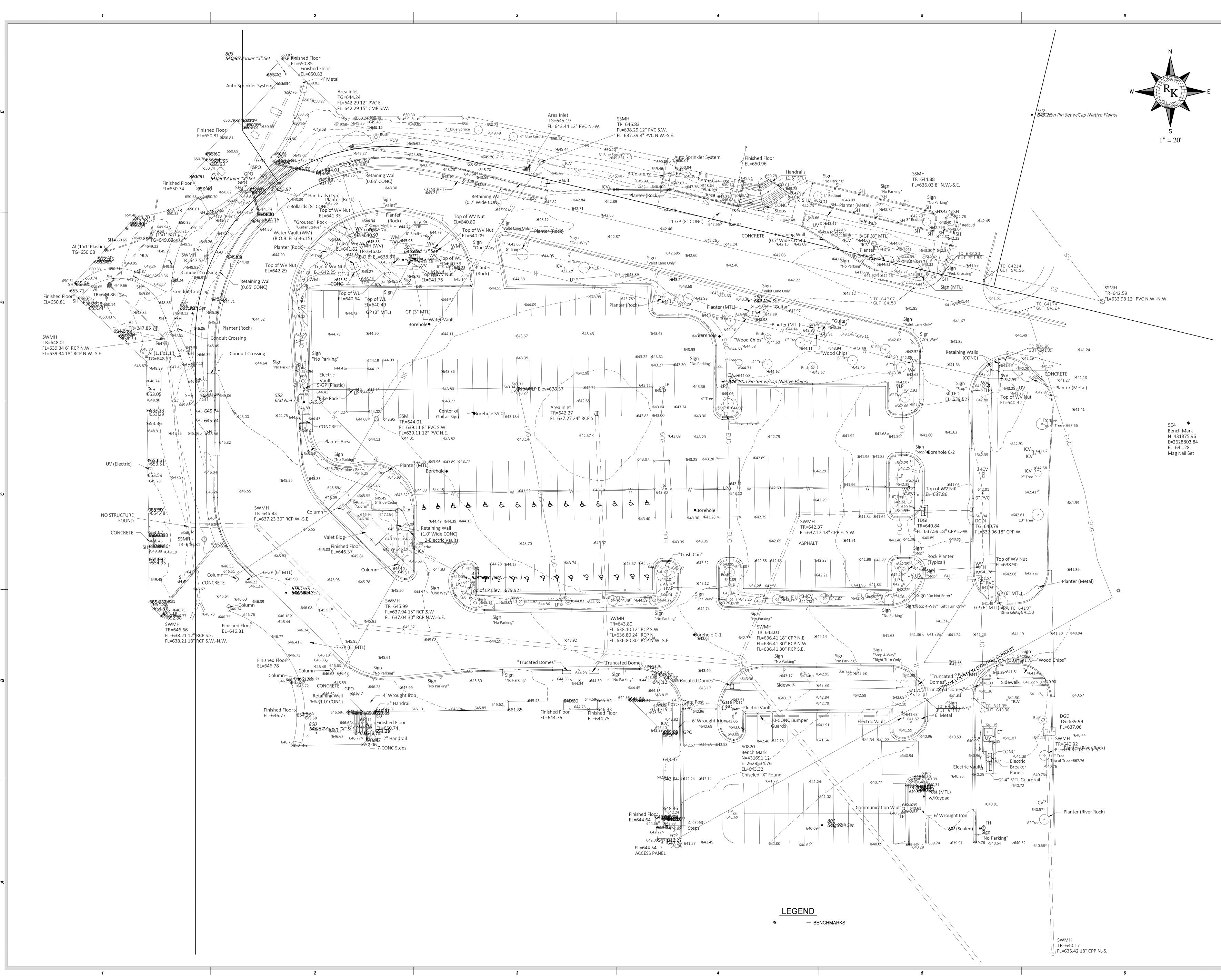
GENERAL NOTES - SITE

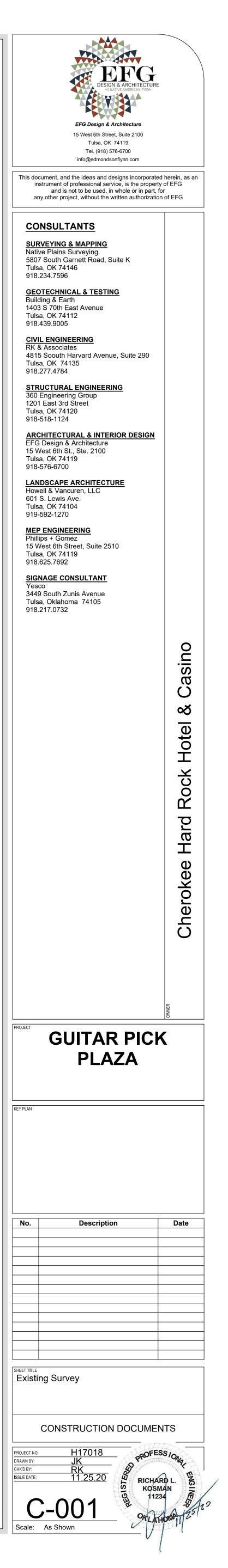
- REFER TO CIVIL DRAWINGS FOR NEW TOPOGRAPHY & ADDITIONAL SITE DETAILS.
- PROVIDE ADA ACCESSABILITY TO THE SITE IN SIDEWALKS & PARKING STALLS PER CODE. DIMENSIONS ARE TO FACE OF STRUCTURE UNLESS OTHERWISE INDICATED.
- FINISH FLOOR ELEVATIONS SHOULD BE COORDINATED WITH CIVIL SEE CIVIL DRAWINGS FOR DETAILED INFORMATION ON NEW GRADING, STORMWATER, UTILITIES, ETC. HEIGHTS AND LOCATIONS
- SEE LANDSCAPE DRAWINGS FOR DETAILED INFORMATION ON PLANTING LOCATIONS AND VEGETATION TYPES. SEE MEP DRAWINGS FOR DETAILED INFORMATION ON SITE LIGHTING AS WELL AS ALL MECHANICAL, ELECTRICAL AND UTILITY ENTRANCES AT THE BUILDING FINISH FLOOR ELEVATIONS SHOWN ON CIVIL GRADING AND DRAINAGE SHEETS SHALL SET THE LEVEL OF THE GROUND FLOOR OF EACH INDIVIDUAL STRUCTURE WHICH IS INDICATED AT THE 0'-0" LEVEL ON THESE SHEETS. CIVIL FINISHED FLOOR INDICATIONS SHALL TAKE PRECEDENCE.

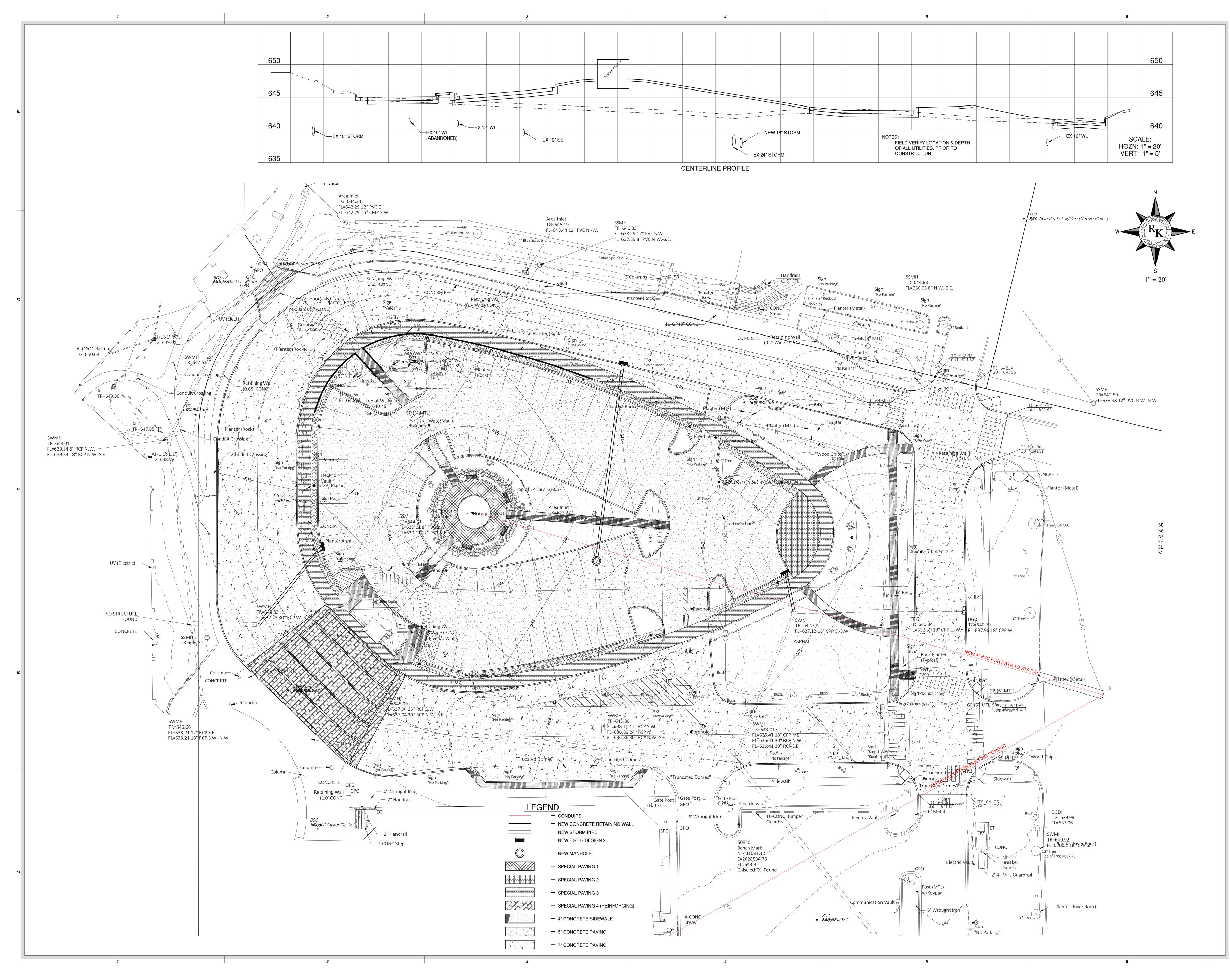
- RETAINING WALL, REF.

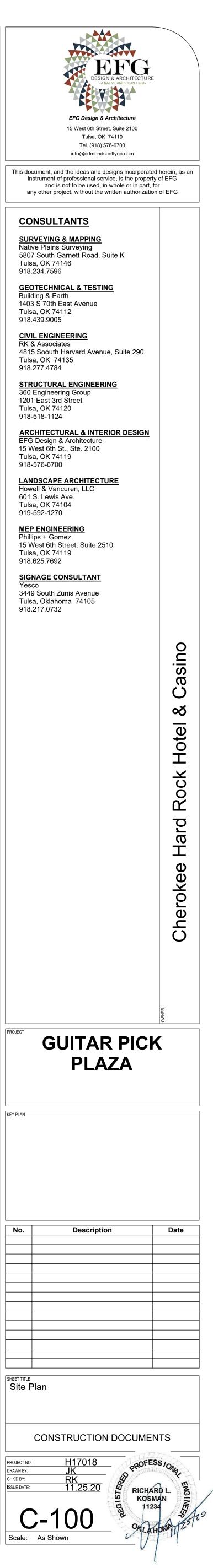
- EXISTING WATER VAULT,

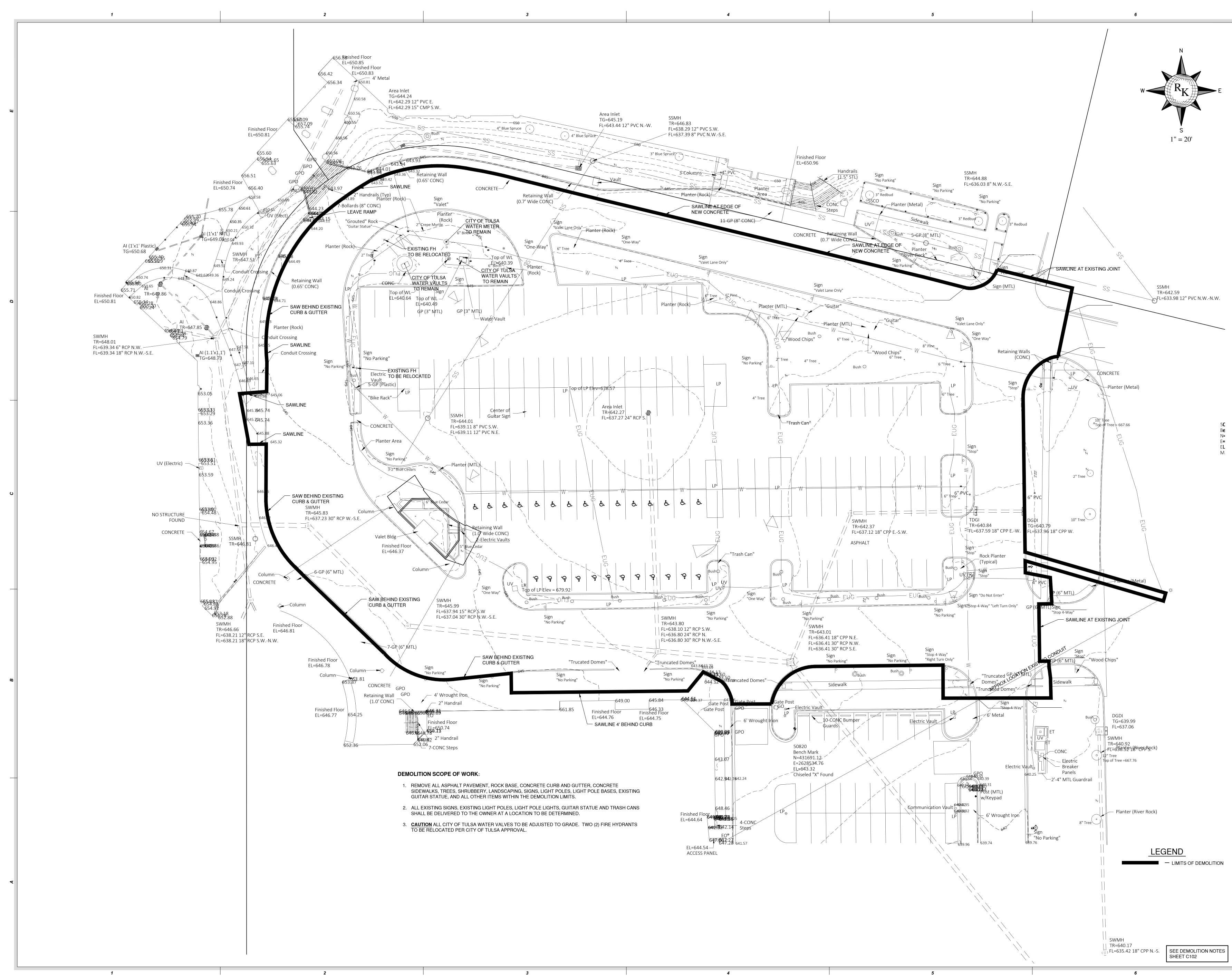


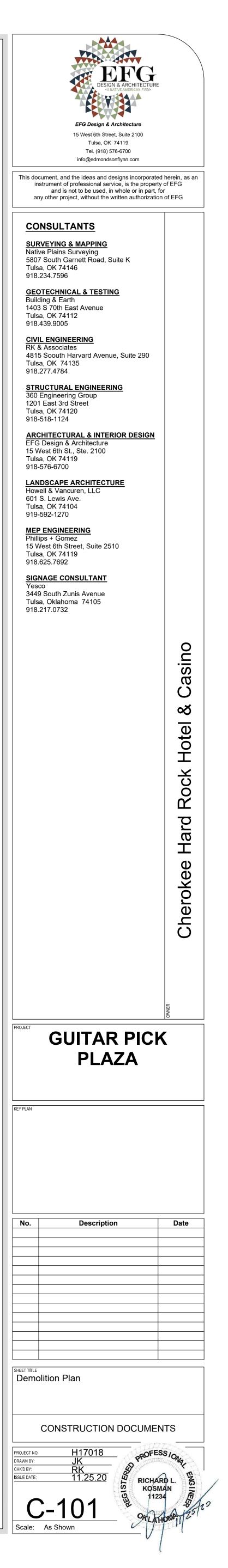












DEMOLITION NOTES:

- 1. CONTRACTOR SHALL ABIDE BY ALL TRIBAL, FEDERAL, STATE, AND LOCAL CODES FOR THE DEMOLITION AND DISPOSAL OF ALL MATERIALS.
- 2. OWNER, CONSTRUCTION MANAGER, ARCHITECT AND ENGINEERS SHALL NOT BE LIABLE FOR ANY DEMOLITION PROCEDURES, SCHEDULING, AND DISPOSAL OF ANY MATERIALS.
- 3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR ALL CONSTRUCTION.
- 4. THE CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION, REMOVAL AND DISPOSING OF THE EXISTING ASPHALT PAVEMENT.
- 5. THE CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE DISCONNECTION, REMOVAL, AND/OR WORKING AROUND UTILITIES.
- 6. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ANY EXISTING IRRIGATION SYSTEM IN THE AREAS OF PROPOSED IMPROVEMENTS. THE CONTRACTOR SHALL CAP THE EXISTING IRRIGATION SYSTEM. SEE LANDSCAPING PLANS.
- 7. THE CONTRACTOR IS RESPONSIBLE FOR THE DISCONNECTION OF ELECTRICAL SURVEILLANCE CAMERAS (AS APPROVED BY CHEROKEE NATION ENTERPRISES - CNE) TO THE EXISTING PARKING LOT PRIOR TO DEMOLITION.
- 8. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND CNE FOR ONSITE LOCATIONS OF EXISTING UTILITIES.
- 9. ALL EXISTING SEWERS, PIPING AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES AND CNE REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH WORK.
- 10. ELECTRICAL, TELEPHONE, CABLE, WATER, SEWER, FIBER OPTIC CABLE AND/OR GAS LINES NEEDING TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PROVIDE NEW CONDUITS COMPLETE IN PLACE INCLUDING PULL WIRES FOR NEW ELECTRICAL SERVICE. TELEPHONE, CABLE, FIBER, COMMUNICATIONS, SURVEILLANCE AND ETC.
- 11. CONTRACTOR MUST PROTECT THE PUBLIC AT ALL TIMES WITH FENCING, BARRICADES, ENCLOSURES, ETC.
- 12. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED PRIOR TO DEMOLITION.
- 13. CONTRACTOR MAY LIMIT FULL DEPTH SAW-CUT AND PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THESE CONSTRUCTION PLANS BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IT'S REMOVAL AND REPAIR.
- 14. CONTRACTOR SHALL MAINTAIN ALL EXISTING PARKING, SIDEWALKS, DRIVES, ETC. CLEAR AND FREE FROM ANY CONSTRUCTION ACTIVITY AND/OR MATERIAL TO ENSURE EASY AND SAFE PEDESTRIAN AND VEHICULAR TRAFFIC TO AND FROM THE SITE.
- 15. DAMAGE TO ALL EXISTING CONDITIONS TO REMAIN WILL BE REPLACED AT CONTRACTOR'S EXPENSE. REPAIRS SHALL RESTORE DAMAGED ITEMS TO EQUAL OR BETTER THAN THE EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING ALL EXISTING DAMAGE AND NOTIFYING CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION START.
- 16. ALL TRENCHES AND/OR EXCAVATED AREA SHALL BE FILLED AND TESTED IN ACCORDANCE WITH THE GEO-TECHNICAL ENGINEERING REPORT.
- 17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADJUSTING OF ANY ITEMS LOCATED IN THE PAVEMENT, TO THE PROPOSED GRADES. ITEMS INCLUDE BUT NOT LIMITED TO VALVE BOXES, METER BOXES, CLEAN OUTS, MANHOLES, INLETS, ETC.
- 18. ABANDONMENT OF UTILITIES IN-PLACE SHALL NOT BE ALLOWED.
- 19. CONTRACTOR SHALL USE EXTREME CAUTION IN EXCAVATION ADJACENT TO EXISTING STRUCTURES TO PREVENT UNDERMINING OR IMPACTING FOUNDATIONS AND FOOTINGS.

UTILITY NOTES:

- 1. THE LOCATION AND /OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE AND EXCAVATION BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF EXISTING UTILITIES.
- 2. CONTRACTOR SHALL NOTIFY THE UTILITY AUTHORITIES AND CNE BEFORE CONNECTING TO ANY EXISTING LINES. CONTRACTOR SHALL COORDINATE AND SCHEDULE TIE-INS/CONNECTIONS WITH ALL UTILITY COMPANIES/OWNERS.
- 3. ALL UNDERGROUND LINES INSTALLED SHALL BE INSPECTED AND APPROVED BY THE TESTING LAB AND/OR UTILITY COMPANY HAVING AUTHORITY PRIOR TO BACKFILLING.
- 4. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND /OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL CONNECTION OF SERVICE.
- 5. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY AND CNE PRIOR TO CONSTRUCTION, ADJUSTMENT, OR RELOCATION OF EXISTING UTILITIES AS DESIGNATED ON THE PLANS.
- 6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES REQUIRED.
- 7. CONTRACTOR SHALL PROVIDE ALL CONDUITS NECESSARY AS SHOWN ON THE PLANS. VERIFY LOCATION OF UTILITY TIE IN AND PROVIDE NYLON PULL CORDS INSIDE CONDUITS.
- 8. CONTRACTOR SHALL KEEP A DAILY AS-BUILT DRAWING ALONG WITH **PICTURES** OF ALL OF THE UNDERGROUND UTILITIES PRIOR TO BACKFILLING. PICTURES SHALL BE GIVEN TO ENGINEER, ARCHITECT AND OWNER'S REPRESENTATIVE ON A MONTHLY BASIS.
- 9. ELECTRICAL CONDUIT SHALL BE PVC SCH 40 (GRAY), TELEPHONE/FIBER CONDUITS PVC SCH40 (WHITE) AND IRRIGATION CONDUITS PVC SCH40 (WHITE). ALL CONDUITS SHALL BE INSTALLED WITH PULL STRINGS.
- 10. COORDINATE WITH ALL SUB-CONSULTANT PLANS.
- 11. ALL STORM SEWER PIPE TO BE ADS HP STORM GRAY PIPE AND PVC SCH 40 PRESSURE PIPE AS SHOWN.

GRADING NOTES:

- 1. ALL GRADING AND EROSION CONTROL SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND CURRENT O.D.O.T. SPECIFICATIONS AND STANDARDS.
- 2. THE CONTRACTOR SHALL VERIFY UTILITY LOCATIONS BEFORE EXCAVATING.
- 3. STRIPPING, PROOF ROLLING, SUBGRADE SCARIFICATION AND COMPACTION, AND FILL CONSTRUCTION FOR THE SITE AND PAVING AREAS SHALL BE PERFORMED ACCORDING TO THE ODOT'S 2009 SPECIFICATIONS AND GEO-TECHNICAL REPORT.
- 4. CONTRACTOR SHALL PROVIDE WATER AS REQUIRED TO OBTAIN SPECIFIED COMPACTION REQUIREMENTS.
- 5. SUBGRADE STABILIZATION SHALL BE PER PLANS OR AS DIRECTED BY THE CONTRACTOR'S TESTING
- 6. CIVIL ENGINEER WILL NOT INTERPRET SOILS REPORTS OR ACCEPT RESPONSIBILITY FOR ALTERNATIVE METHODS PROPOSED BY THE CONTRACTOR.
- 7. ALL INDEPENDENT THIRD PARTY TESTING BY THE OWNER.
- 8. UNDERCUTTING OF SOFT SPOTS AND PLACEMENT OF EARTHWORK IS GOVERNED BY THE GEO-TECHNICAL REPORT FOR THE SITE.
- 9. CORRECTIVE MEASURES DIRECTED BY THE ENGINEER MAY INCLUDE COMPLETE REMOVAL AND REPLACEMENT AT NO COST TO THE OWNER IN CASES OF POOR WORKMANSHIP OR UNSATISFACTORY IN-PLACE CONDITIONS.
- 10. SITE GRADING SHALL NOT PROCEED UNTIL APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED.
- 11. THE CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS THROUGHOUT ALL PHASES OF CONSTRUCTION.

GENERAL NOTES:

- 1-800-522-6543.

- REGULATIONS.
- AVAILABLE TO SURVEYOR.

SITE NOTES:

- REGULATIONS CODES AND OSHA STANDARDS.

- START

1. ALL GRADING, PAVING, STORM SEWER, AND UTILITY CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS & STANDARDS. ALL CONSTRUCTION TESTING SHALL BE IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF TRANSPORTATION (O.D.O.T.) 2019 MATERIAL AND TESTING e-Guide, FIELD SAMPLING, TESTING AND ACCEPTED GUIDES . GRADING & COMPACTION & ANY SELECT MATERIAL FOR THE BUILDING SHALL BE PER THE GEO-TECHNICAL REPORT.

2. CONTRACTOR SHALL GIVE THE NOTIFICATION CENTER OF THE OKLAHOMA 'ONE-CALL SYSTEM INC'. NOTICE OF ANY EXCAVATION NO SOONER THAN TEN DAYS OR LATER THAN 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS OR LEGAL HOLIDAYS), PRIOR TO COMMENCEMENT OF WORK. PHONE

3. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE DRAWINGS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESES DRAWINGS AND WE ASSUME NO RESPONSIBILITY AS TO THE ACCURACY OF THEIR DEPICTED LOCATION ON THESE DRAWINGS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN, AND ALL OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE DRAWINGS BY VERIFICATION OF THEIR LOCATION IN THE FIELD PRIOR TO THE INITIATION OF THE ACTUAL PORTION OF THEIR WORK.

4. ALL CONSTRUCTION STAKING SHALL BE PERFORMED BY LICENSED SURVEYOR. ELECTRONIC DATA WILL BE MADE AVAILABLE TO THE SURVEYOR FOR HIS USE.

5. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE TRIBAL, FEDERAL, STATE AND LOCAL LAWS GOVERNING SAFETY, HEALTH, AND SANITATION. THE CONTRACTOR SHALL PROVIDE ALL SAFEGUARDS, SAFETY DEVICES AND PROTECTIVE EQUIPMENT, AND TAKE ANY OTHER NEEDED ACTIONS ON HIS OWN RESPONSIBILITY OR AS THE ENGINEER MANY DETERMINE REASONABLY NECESSARY TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF THE WORK COVERED BY THE CONTRACT. THE CONTRACTOR SHALL COMPLY WITH THE LATEST OSHA

6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS REQUIRED.

7. ALL DIMENSIONS SHALL BE COORDINATED WITH ENGINEER. AN ELECTRONIC FORMAT WILL BE

8. THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A DISCREPANCY OR INCONSISTENCY IS IDENTIFIED ON THE PLANS AND/OR SPECIFICATIONS IMMEDIATELY.

9. CONTRACTOR SHALL KEEP ON SITE A CURRENT SET OF THE APPROVED CONSTRUCTION WORKING DRAWINGS AT ALL TIMES. THE CONTRACTOR SHALL MARK (IN RED) ALL APPROVED CHANGES INCURRED FOLLOWING APPROVAL OF THE INITIAL DRAWINGS. THESE CHANGES MAY BE INITIATED FROM FIELD CONDITIONS OR CHANGES MADE BY THE DESIGN ENGINEER. EXCEPT FOR MINOR FIELD ADJUSTMENTS, ALL CHANGES SHALL BE REVIEWED AND AGREED TO BY THE DESIGN ENGINEER PRIOR TO FINAL APPROVAL OF THE PROJECT. THE CONTRACTOR SHALL SUBMIT THE WORKING DRAWINGS TO THE DESIGN ENGINEER AFTER FINAL INSPECTION OF THE PROJECT TO SERVE AS A BASIS FOR DEVELOPMENT OF THE FINAL AS-BUILT RECORD DRAWINGS.

10. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY THE AUTHORITY HAVING JURISDICTION AND/OR UTILITY SERVICE COMPANIES, SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND FINAL CONNECTION OF SERVICE.

1. THE WORK AND MATERIAL SHALL COMPLY WITH ALL TRIBAL/CITY/COUNTY/STATE FEDERAL

2. CONTRACTOR SHALL COORDINATE PLANS WITH OTHER SUB-CONSULTANT PLANS.

3. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE PROJECT SPECIFICATIONS

4. ALL CURB/SIDEWALK/VAN HANDICAP CONSTRUCTION SHALL CONFORM TO 2010 FEDERAL ADA STANDARDS OR LOCAL CODES, WHICHEVER IS MORE RESTRICTIVE.

5. CONTRACTOR SHALL ENSURE ALL NECESSARY PERMITS ARE OBTAINED PRIOR TO CONSTRUCTION

COLORED CONCRETE FINISHING:

- 1. INSTALLER SHALL PROVIDE A QUALIFIED FOREMAN OR SUPERVISOR WITH A MIN YEARS OF EXPERIENCE WITH IMPRINTED AND TEXTURED CONCRETE, AND HAV FIVE (5) HIGH QUALITY INSTALLATIONS SIMILAR TO THOSE PRODUCED BY THE
- 2. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ACI 301, 302, 303, AND 304 3. THE BOMANITE COMPANY IS USED AS THE BASIS OF DESIGN, QUALITY, COLOR, REINFORCEMENT, WARRANTY, ETC. FOR ALL COLORED AND/OR IMPRINTED CO INSTALLERS SHOULD BE SUBMITTED FOR APPROVAL BY OWNERS REPRESENT/ TEN (10) DAYS PRIOR TO BIDDING.
- 4. INSTALLER SHALL WARRANTY ALL MATERIALS TO BE OF UNIFORM QUALITY WIT TOLERANCES. IF MATERIALS ARE PROVEN TO BE DEFECTIVE, INSTALLER SHALL PURCHASE PRICE OF THAT PORTION OF MATERIAL TO THE OWNER.
- 5. CONTRACTOR TO PROVIDE FIELD SAMPLES OF SURFACE COLORS, TEXTURES, SPECIFIED ON CONSTRUCTION DRAWINGS FOR OWNER REPRESENTATIVE'S AF BEGINNING WORK. EACH SAMPLE TO BE 48" x 48". CONTRACTOR TO REFINISH O SAMPLE AS REQUIRED TO PRODUCE ACCEPTABLE WORK.
- 6. CONTRACTOR TO SUBMIT PROPOSED MIX DESIGN FOR EACH CLASS OF CONCR PRIOR TO COMMENCING WORK.
- 7. USE ACCELERATING AND RETARDING ADMIXTURES CONTAINING NO CALCIUM WEATHER ONLY WHEN APPROVED BY TESTING LABORATORY.
- 8. ADD AIR ENTRAINING AGENT TO CONCRETE MIX FOR CONCRETE WORK EXPOSI AMOUNTS OF FOUR (4) TO SEVEN (7) PERCENT OF TOTAL CONCRETE VOLUME RECOMMENDED BY TESTING LABORATORY.
- 9. FIELD INSPECTIONS, TESTING, AND ANALYSIS TO BE PERFORMED UNDER PROV SPECIFICATION SECTION 01400 - QUALITY CONTROL. TESTING FIRM WILL TAKE PERFORM SLUMP AND AIR ENTRAINMENT TESTS IN ACCORDANCE WITH ACI 301 TEST CYLINDERS WILL BE TAKEN FOR EACH CLASS OF CONCRETE PLACED EA TEST WILL BE TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN. CONTRACTO RECORDS OF PLACED CONCRETE ITEMS INCLUDING BUT NOT LIMITED TO DATE QUANTITY, AIR TEMP, TEST SAMPLES, ETC.
- 10. TESTING AGENCY TO BE INDEPENDENT AND ACCEPTABLE TO AUTHORITIES HAV QUALIFIED ACCORDING TO ASTM C 1077 AND ASTM E 329 TO CONDUCT THE TES DOCUMENTED ACCORDING TO ASTM E 548.
- 11. SUPPLIER OF READY-MIXED CONCRETE PRODUCTS SHALL COMPLY WITH ASTM FOR PRODUCTION FACILITIES AND EQUIPMENT. SUPPLIER SHALL BE CERTIFIED NCRMA'S "CERTIFICATION OF READY MIXED CONCRETE PRODUCTION FACILITIE MANUALS".
- 12. CONCRETE FORMS TO BE CONSTRUCTED AND REMOVED IN ACCORDANCE WIT
- 13. CONTRACTOR TO VERIFY FORMS ARE SECURE TO CORRECT LOCATIONS, DIME WITH BRACES AS NEEDED TO WITHSTAND APPLIED LOADS DURING CONCRETE
- 14. CONTRACTOR TO MAKE ALL NECESSARY PROVISIONS FOR THE INSTALLATION (ACCESSORIES, ANCHORS, AND SLEEVES.
- 15. VAPOR RETARDER TO BE CONTINUOUS OVER SUBGRADE WITH 12" MINIMUM OV AND SEALED WITH JOINT TAPE OF THE SAME PERMEANCE AS SHEETING MATER RETARDING MEMBRANE IS NOT USED, MOISTEN BASE TO MINIMIZE ABSORPTIO FRESH CONCRETE
- 16. ALL JOINTS IN CONCRETE PAVING TO BE VERTICAL IN POSITION AND IN STRAIG OTHERWISE DIRECTED ON PLANS.
- 17. CONCRETE TO BE PLACED CONTINUOUSLY BETWEEN PREDETERMINED CONS NOT BREAK OR INTERRUPT WITH COLD JOINTS. UNINTENTIONAL STOPPAGE LIN BY ARCHITECT FOR COMPLIANCE AND APPROVAL.
- 18. WHEN STOPPAGE OCCURS AT AN EXPANSION JOINT, INSTALL JOINT ASSEMBL' SUFFICIENT SECTION DRILLED TO ACCOMMODATE REQUIRED DOWELS. EXPAN MAXIMUM OF 40 FEET O.C.E.W. IN PARKING LOTS AND 20 FEET O.C.E.W. AT PEDE
- 19. WHEN STOPPAGE OCCURS AT A CONTRACTION JOINT, INSTALL SHEET METAL SUFFICIENT SECTION TO PREVENT DEFLECTION, SHAPED TO CONCRETE SECT TO PERMIT CONTINUATION OF LONGITUDINAL REINFORCING STEEL THROUGH
- 20. WHEN UNINTENTIONAL STOPPAGE OCCURS, IMMEDIATELY PLACE AVALIABLE C AND INSTALL A BULKHEAD PERPENDICULAR TO THE SURFACE OF PAVEMENT A ELEVATION. PLACE AND FINISH CONCRETE TO BULKHEAD AND DISPOSE OF ANY REMAINING ON SUBGRADE AHEAD OF BULKHEAD. NEW CONCRETE SHALL BE RO CONCRETE ONCE SET ENOUGH TO REMOVE BULKHEAD.
- 21. CONTRACTOR JOINTS TO BE SPACED AS DETAILED ON DRAWINGS BUT NOT GR ON CENTER. SAW CUT JOINTS TO BE DONE WITHIN 18 HOURS AFTER CONCRET OF PAVING DEPTH BUT NO SHALLOWER THAN 1 INCH WITH A POWER-DRIVEN C
- 22. CONCRETE REINFORCEMENT TO BE ACCURATELY PLACED IN THE MIDDLE OF S BE FREE OF RUST, MILL SCALE, DIRT AND OIL. IF NEEDED, REINFORCEMENT TO BAR CHAIRS TO MINIMIZE DISPLACEMENT DURING CONCRETE POUR.
- FIBER ASTM C 948; COLLATED, FIBRILLATED 3/4" LONG, VIRGIN POLYPRO STEEL - ASTM A 615; GRADE 60, DEFORMED BILLET STEEL BARS WITH UNC
- DISCONTINUE EVERY OTHER BAR AT CONTROL AND EXPANSION JOINTS. WIRE - ASTM A 185: WELDED STEEL WIRE FABRIC IN FLAT SHEETS AND UI
- 23. INTEGRAL CONCRETE COLORING ADMIXTURE TO BE EQUAL TO THOSE SUPPLI MEETING ASTM C 979 AND ASTM C 494.
- 24. CONCRETE COLOR HARDENER TO BE EQUAL TO THOSE SUPPLIED BY BOMANT HARDENER TO BE APPLIED EVENLY TO THE SURFACE OF FRESH CONCRETE B METHOD AT A RATE RECOMMENDED BY THE MANUFACTURER. FLOAT CONCRET AND TROWELED ONLY AFTER THE FINAL FLOATING.
- 25. MAT TYPE IMPRINTING TOOLS FOR TEXTURING FRESHLY PLACED CONCRETE 1 MANUFACTURED BY BOMANITE. ALTERNATIVE TOOLS AND SUBSTITUTIONS TO OWNER'S REPRESENTATIVE. IMPRINTS TO BE APPLIED WITH UNIFORM PATTERN BREAKER SHOULD BE UTILIZED TO KEEP TOOLS FROM STICKING TO FRESH CO
- 26. POWDERED AND LIQUID RELEASE AGENTS TO BE EQUAL TO THOSE PRODUCED CONTRACTOR TO SUBMIT RELEASE AGENT SUBSTITUTIONS FOR APPROVAL BY REPRESENTATIVE. RELEASE AGENTS SHOULD BE APPLIED TO THE TROWELED S PATTERN/TEXTURE IMPRINTING.
- 27. TOPICAL AND CHEMICAL STAINS TO BE EQUAL TO THOSE PRODUCED BY BOMAN 28. MEMBRANE COLOR AGENTS INCLUDING COLOR, CLEAR, AND CLEAR MATTE FIN
- 29. SEALING AND FINISH COATINGS TO BE EQUAL TO COLORWAX, HYDROLOCK, AN

THOSE PRODUCED BY BOMANITE.

COMMENCING CONCRETE WORK.

PRODUCED BY BOMANITE.

- 30. CONCRETE PAVING SHALL NOT BE INSTALLED WHEN BASE SURFACE OR AMBIE
- LESS THAN 40 DEGREES OR IF BASE IS WET OR FROZEN. 31. CONTRACTOR TO VERIFY SUBGRADE IS PROPERLY COMPACTED AND THAT ALL
- BASE MATERIAL ARE CORRECT. 38. BEGINNING OF CONCRETE INSTALLATION MEANS ACCEPTANCE OF EXISTING C
- 39. CONTRACTOR TO NOTIFY ARCHITECT AND TESTING LABORATORY A MINIMUM OF 24 HOURS PRIOR TO
- 40. CONTRACTOR TO PROTECT CONCRETE IMMEDIATELY AFTER PLACEMENT UNDER PROVISIONS OF SECTION 01500 FROM PREMATURE DRYING, EXCESSIVE HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY.

	5			6		
			QUANTITIES			
	ITEM 202(A)	UNCLASSIFIED EXCAVATION	DESCRIPTION	(R-1)	UNIT L.S.	QUANTITY
MINIMUM OF THREE (3) AVE INSTALLED AT LEAST	221(C) 221(F)	TEMPORARY SILT FENCE TEMPORARY ROCK BAGS		(4)	L.F. L.F.	200 100
E BOMANITE COMPANY.	303(A) 307(J)	TYPE "A" AGGREGATE BASE SUBGRADE METHOD B	(6" THICK)		C.Y. S.Y.	2,000 12,320
304.	325	SEPARATOR FABRIC		(5)	S.Y.	10,240
R, TEXTURE, CONCRETE. ALTERNATE	414(A) 414(A)	5" P.C. CONCRETE PAVEME	NT (ROADWAYS)	(5) (5)	<u>S.Y.</u> <u>S.Y.</u>	4,430 5,230
ITATIVE NO LESS THAN	609(B) 610(A)	6" CONCRETE MONOLITHIC 4" CONCRETE SIDEWALK	CURB		L.F. S.Y.	2,760 345
/ITHIN MANUFACTURING	611(G) 613(E)	INLET CI DESIGN 2 (STD) 12" CORRUGATED POLYETH	IYLENE PIPE (ADS HP-STORN	I-GRAY PIPE) (1)(3)	EA. L.F.	3 60
	613(E) 616(B)		IYLENE PIPE (ADS HP-STORN	· · · · · · · · · · · · · · · · · · ·	L.F. L.F.	145 200
S, AND PATTERNS APPROVAL PRIOR TO	616(B)	6" PVC SCH 40 CONDUITS (C	PEN CUT)		L.F.	500
I OR REPLACE MOCK-UP	616(B) 619(A)	4" PVC SCH 40 CONDUITS (E REMOVAL OF STRUCTURES	AND OBSTRUCTIONS	(9)(R-48)(R-49)	L.F. L.S.	100 1
CRETE FOR REVIEW	619(B) 642(A)	REMOVAL OF CONCRETE & CONSTRUCTION STAKING L		(4)	L.S. L.S.	1
I CHLORIDE IN COLD	643 SPEC	CONTRACTOR TESTING AND SIGNING	QUALITY CONTROL	(6)	L.S. L.S.	1
	SPEC SPEC	ROADWAY STRIPING & MAR RELOCATE FIRE HYDRANTS		(7)	L.S.	1
DSED TO EXTERIOR, IN E OR AS OTHERWISE	SPEC	PARKING STRIPING (INCLUD	NING CROSS-WALKS)	(7)	L.S.	1
	SPEC SPEC	CONCRETE RETAINING WAL SPECIAL PAVEMENT #1	<u>.</u>	(8) (5)(10)	L.F. S.Y.	230 115
DVISIONS IN E CYLINDERS AND	SPEC SPEC	SPECIAL PAVEMENT #2 SPECIAL PAVEMENT #3		(5)(10) (5)(10)	S.Y. S.Y.	110 750
01. FOUR CONCRETE ACH DAY. ONE SLUMP	SPEC	SPECIAL PAVEMENT #4		(5)(10)(11)	S.Y.	540
OR TO MAINTAIN FE, LOCATION OF POUR,						
		<u>P</u> /	AY QUANTITY NOTE	<u>ES:</u>		
AVING JURISDICTION, ESTING INDICATED AS	(R-1) PAYN	IENT FOR THIS ITEM WILL BE BASED	ON " <u>LUMP SUM</u> ". SEE SECTION 10	9.01B OF THE STANDARD S	PECIFICAT	IONS.
TM C 94 REQUIREMENTS		JDES REMOVAL OF ALL EXISTING RC S, FENCES, AND OTHER STRUCTUR		HEADWALLS (UNLESS OTH	ERWISE SF	PECIFIED),
ED ACCORDING TO TES QUALITY CONTROL		ECOME THE PROPERTY OF AND BE D		R IN A MANNER APPROVED) BY THE EI	NGINEER.
	(1) PRICE BID 1	TO INCLUDE THE COST OF STANDAR	D TRENCHING AND STANDARD BE	DDING MATERIAL PER STAN	NDARD SPI-	-4-01E TO
ITH ACI 347.		F SUBGRADE AND TYPE "A" AGGREG				
ENSIONS, AND PROFILE E POUR.						
NOF INSERTS,		HALL BE ADS HP (GRAY PIPE). FO INCLUDE FULL DEPTH SAWCUTS /			GEO-TECH	
OVERLAPPED SEAMS	()	NG THICKNESSES.		OTHER DRIVE WATS. SEE		
ERIAL. IF A VAPOR ON OF WATER FROM	()	L INCLUDE ALL JOINT SEALING, SAW	,	,		,
	(6) CONTRACT	OR SHALL USE O.D.O.T. 2019 MATER	IALS TESTING E-GUIDE FOR THIS I	PROJECT.		
IGHT LINES UNLESS	()	COSTS FOR FIRE HYDRANT RELOCA			,	,
STRUCTION JOINTS. DO	PLUGGING SEE SHEET	& ECT. PER CITY OF TULSA INSTRUC C103).	TIONS FOR A COMPLETE INSTALL	ATION. (TWO (2) HYDRANTS	3 TO BE RE	LOCATED
INES TO BE REVIEWED		ING, FABRICATION AND PLACING OF OF CONCRETE REINFORCEMENT" (A				
LY WITH A BULKHEAD OF NSION JOINTS AT A	COMPRESS	SIVE STRENGTH OF 4,000 PSI. ALL RE DRCING BAR HOOKS SHALL BE ACI S	EINFORCING BAR SPLICES SHALL I	BE 44 DIAMETERS UNLESS N	NOTED OTH	HERWISE.
DESTRIAN PAVING.		BEDDED ITEMS SHALL BE SET BEFOR				
. JOINT ASSEMBLY OF TION. DRILL BULKHEAD	(9) INCLUDE RI	EMOVAL OF TREES, LIGHT POLES, SI	GNS AND ALL OTHER ITEMS WITH	IN THE CONSTRUCTION ARE	EA.	
I CONSTRUCTION JOINT.	(10) SPECIAL PA	AVING				
CONCRETE TO A LINE		CIAL PAVING 1 TO BE "BOMANITE R				
NY CONCRETE RODDED WITH POURED	OWN	MUM OF (5) GLASS SAMPLES IN SHA NER'S REPRESENTATIVE. ONCE GLAS ITRACTOR TO PRODUCE A 4'x4' PAVII	SS COLOR(S) AND SIZE ARE APPRO	OVED,		
REATER THAN 20 FEET		RESENTATIVE.	NG MOOK-OF FOR AFFROVAL BY	WINER 3		
TE PLACEMENT AT 1/4 CONCRETE SAW.	• SPF	CIAL PAVING 2 TO BE " BOMANITE R	EVEAL GLASS SERIES" . CONTRA	CTOR TO SUBMIT A		
SLABS-ON-GRADE AND	MINI	MUM OF (5) GLASS SAMPLES FOR AF	PPROVAL BY OWNER'S REPRESEN	TATIVE. ONCE		
O BE SUPPORTED ON	MOC	CK-UP FOR APPROVAL BY OWNER'S F	REPRESENTATIVE.			
OPYLENE FIBERS.	REP	O IN SPECIAL PAVING TO BE BASED RESENTATIVE. LOGO TO BE OUTLINE	ED WITH BRASS TERRAZZO DIVIDE	R STRIP AND		
NCOATED FINISH.	SUB	LED WITH HIGH QUALITY, WHITE PO MIT A MINIMUM OF (3) WIDTHS OF BF	RASS TERRAZZO DIVIDER STRIPS I	FOR APPROVAL BY		
». JNCOATED FINISH.		NER'S REPRESENTATIVE. SIZE AND C DSCAPE ARCHITECT PRIOR TO ORDI		RDINATED WITH		
IED BY BOMANITE	• SPF	CIAL PAVING 3 TO BE " BOMANITE S				
	HAR	DROCK OFFICIAL PURPLE IS " PMS (MIT (5) 3" x3" BOMANITE SANDSCA	668C". PRIOR TO LARGE MOCK-U	P, CONTRACTOR TO		
ITE. BEFORE IMPRINTING, 3Y THE DRY-SHAKE	OFF	ICAL PURPLE, (2) LIGHTER SHADES, DE IS APPROVED, CONTRACTOR TO	AND (2) DARKER SHADES OF PURF	PLE. ONCE COLOR		
ETE AFTER EACH SHAKE	BY C	OWNER'S REPRESENTATIVE.				
TO BE EQUAL TO THOSE		CIAL PAVING 4 TO BE SIMILAR TO "				
D BE APPROVED BY RN AND DEPTH. BOND ONCRETE.	MIXT	RV-080211-13) WITH ALLOY" . CONTF FURE OF APPROVED GLASS COLORS ROVED, CONTRACTOR TO PRODUCE	AND INTENSITIES. ONCE COLOR	SAMPLE IS		
ED BY BOMANITE.		NER'S REPRESENTATIVE.		HOVAL BI		
BY OWNER'S D SURFACE PRIOR TO	• ALI	SPECIAL PAVING TO BE SEALED WIT	H OUTDOOR GRADE PRODUCTS F	QUAL TO THOSE		
		D BY BOMANITE.				
	(11) REINFORCE	E WITH #4 BARS ON 18" CENTERS EA	CH WAY.			
INISH TO BE EQUAL TO						
ND/OR VOC II AS						
BIENT TEMPERATURE IS						
LL ELEVATIONS OF THE			TANDARDS USED	_		
CONDITIONS.		ROADWAY	TRAFFIC SIGNAGI	Ξ		
I OF 24 HOURS PRIOR TO		TSC2-4-0 CSCD-6-0 LECS-5-0	PM1-1-03 PM6-1-00			
		LEU3-3-U				

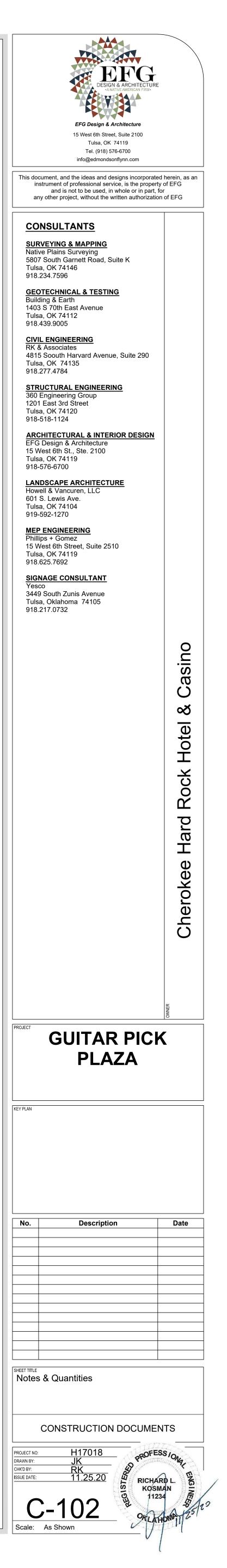
CSCD-6-0 LECS-5-0 LTU-5-0 WCR-4-0 TWD-2-0 CI-2-0 SSIF-5-0 CIG-4-0 MFC-5-0

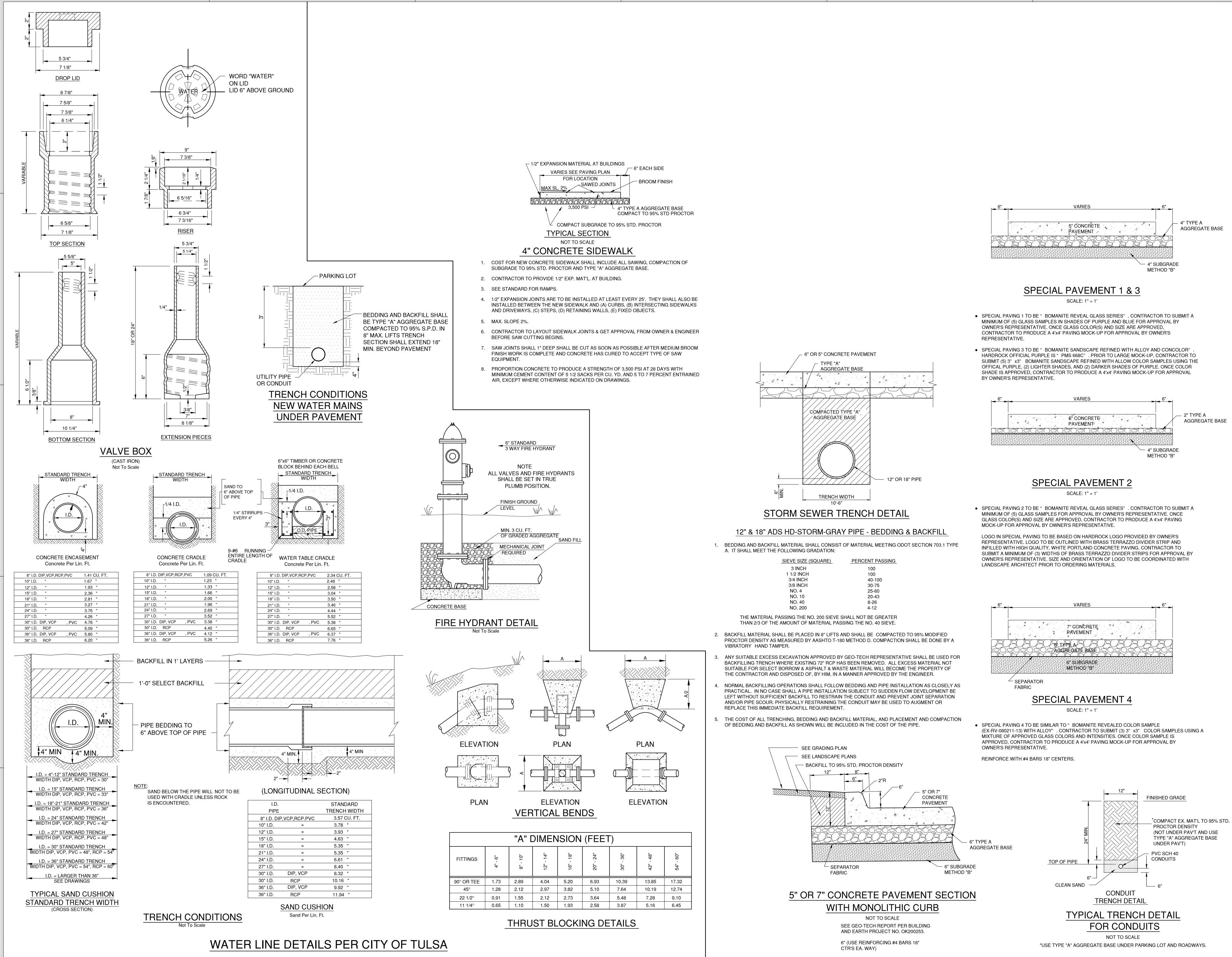
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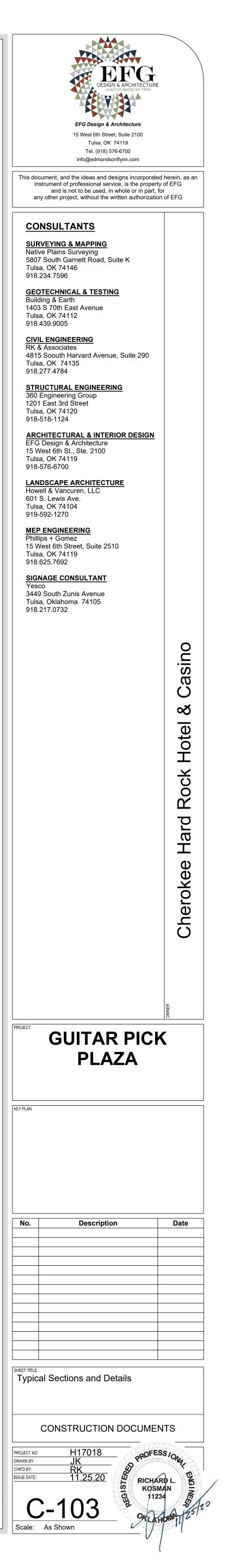
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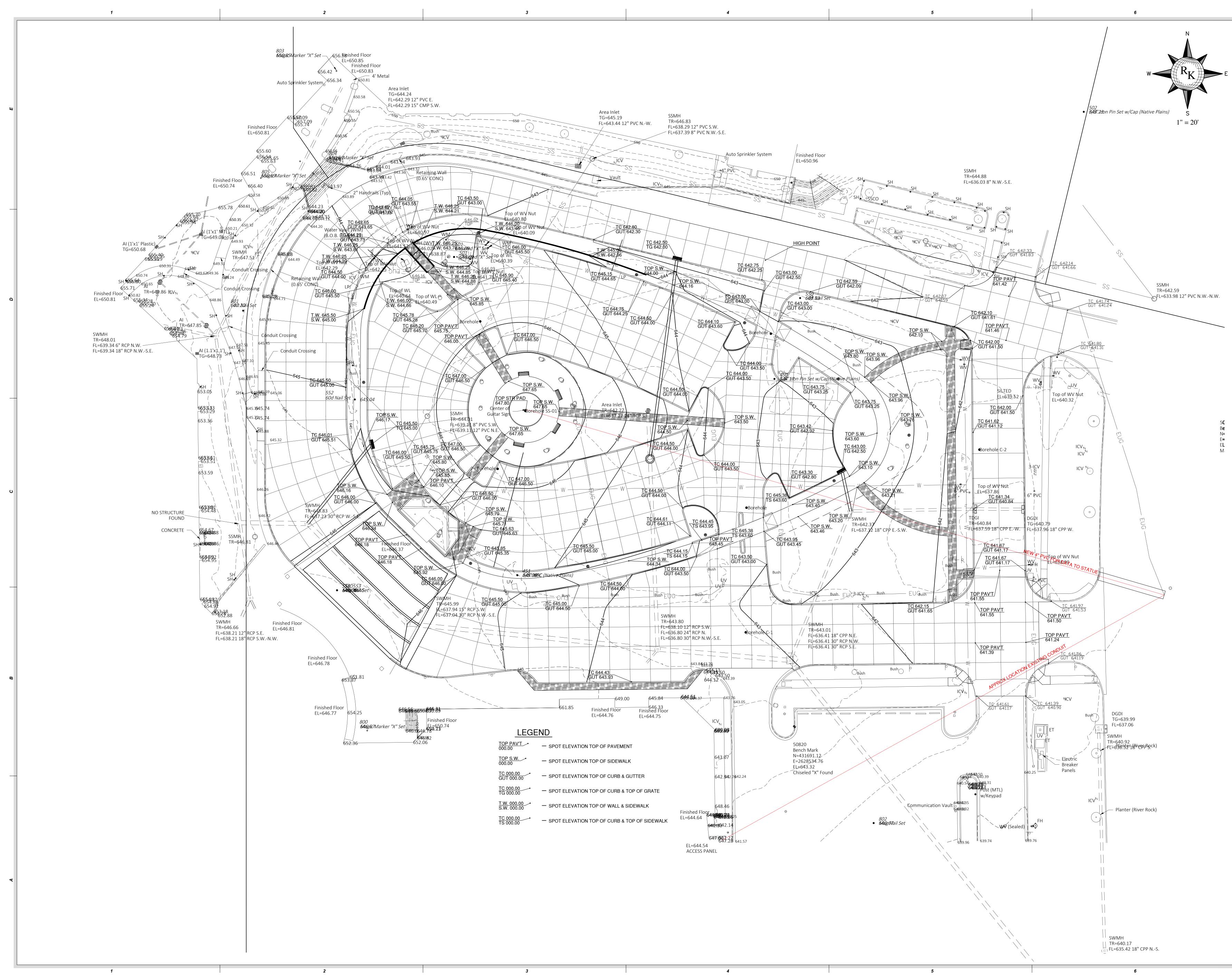
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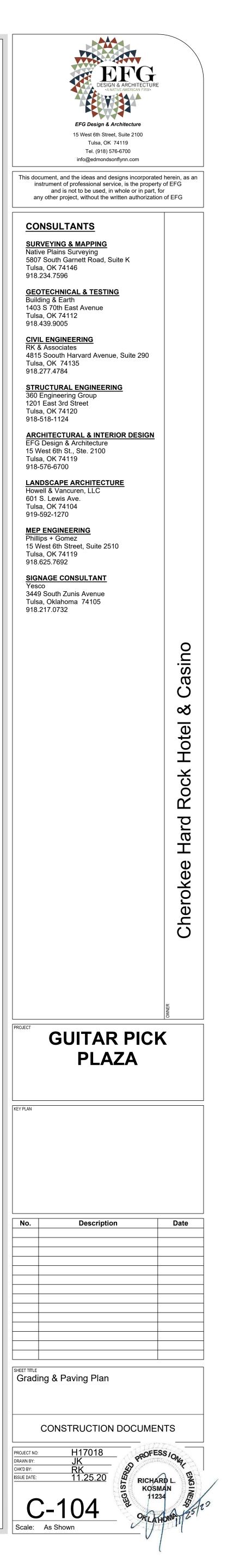
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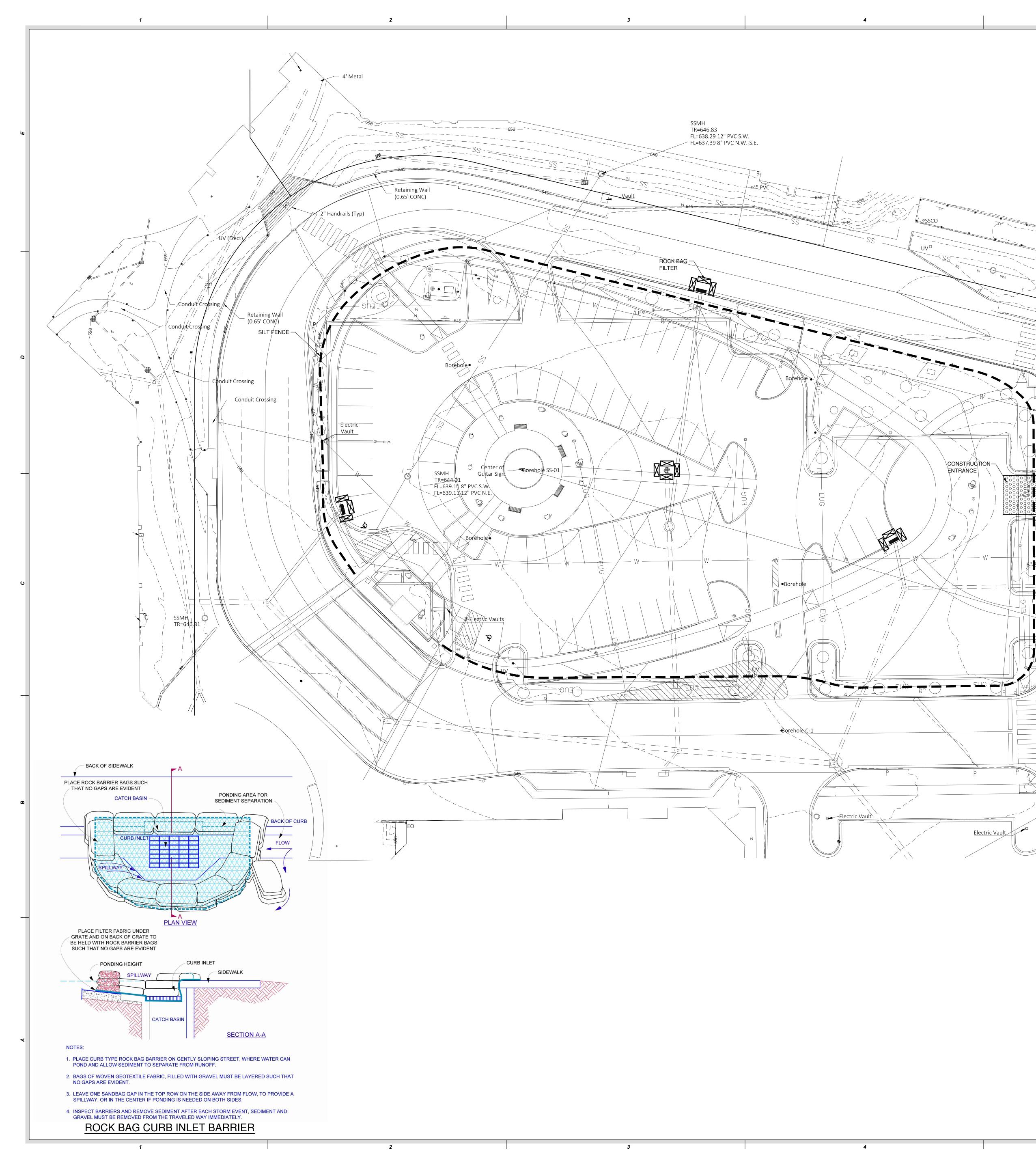


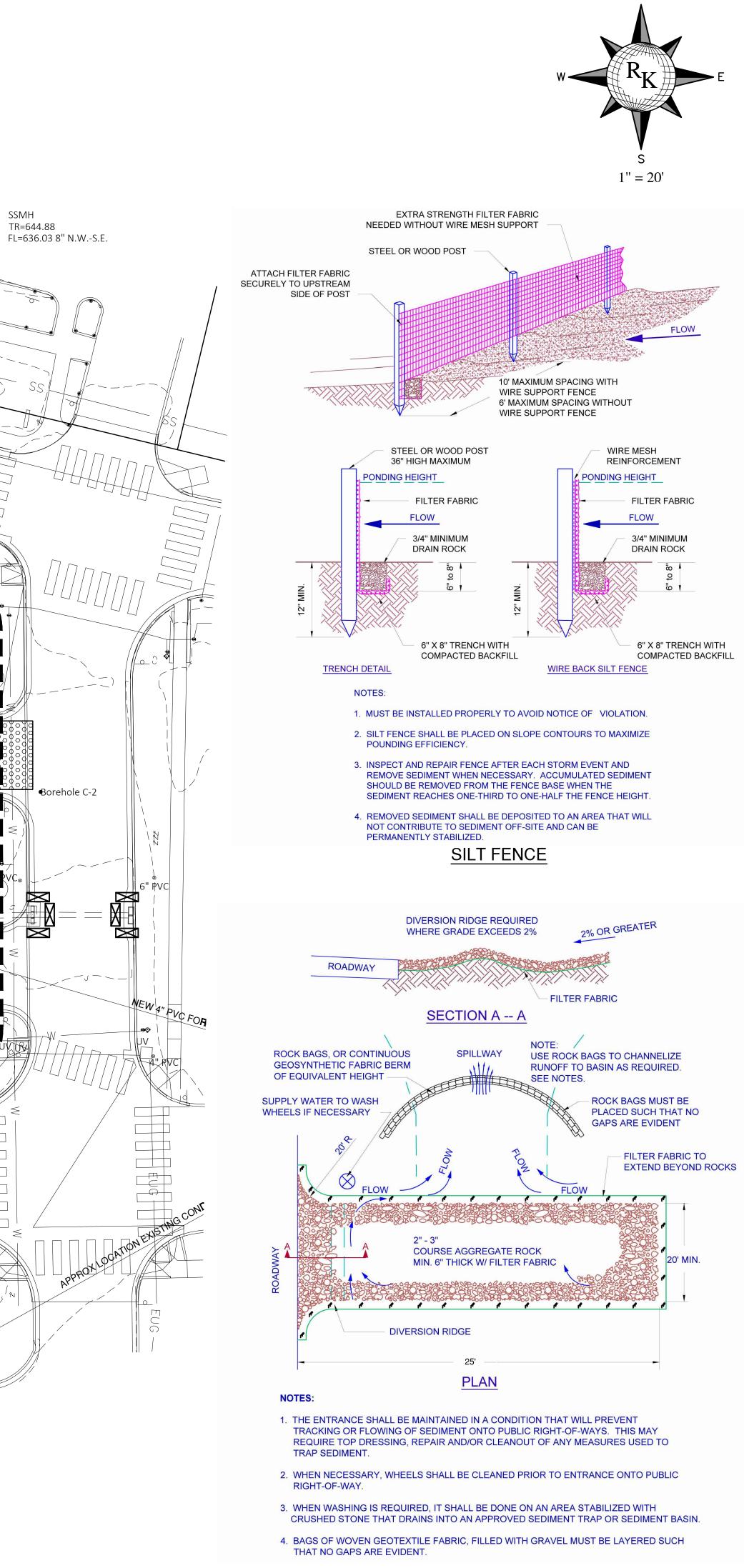






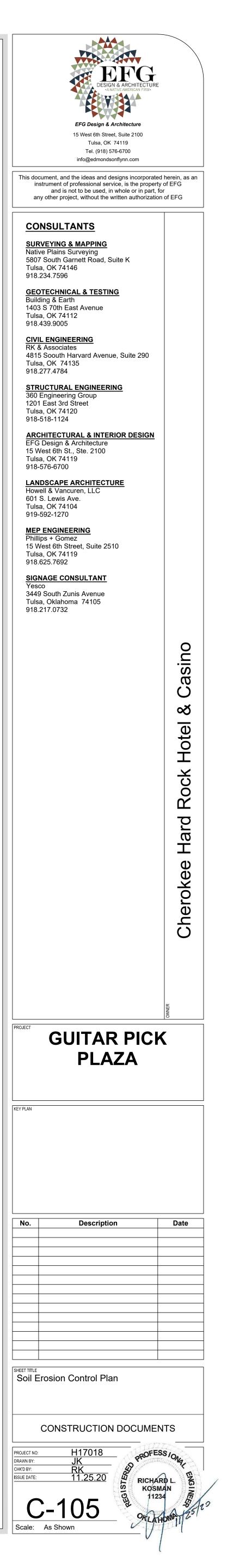


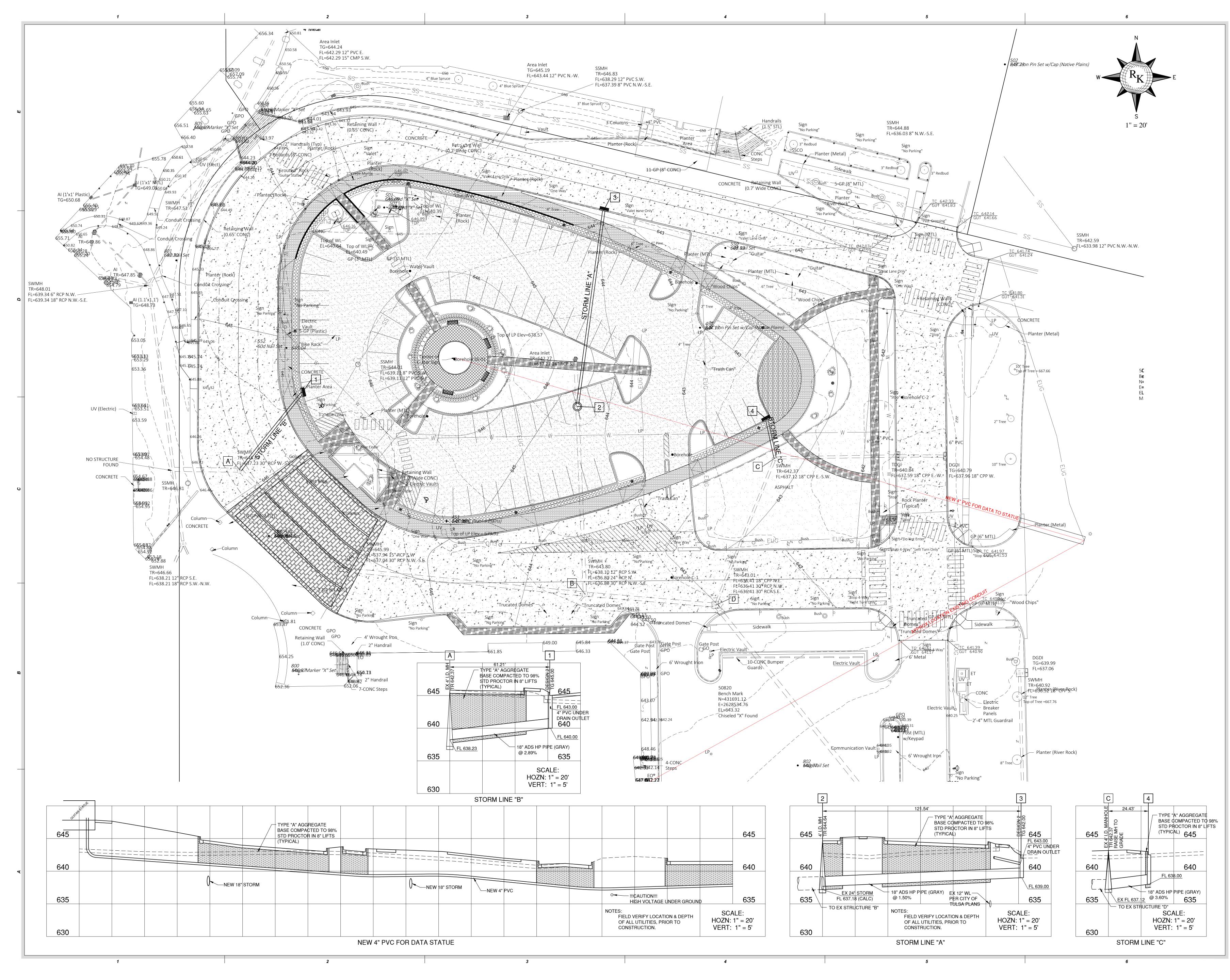


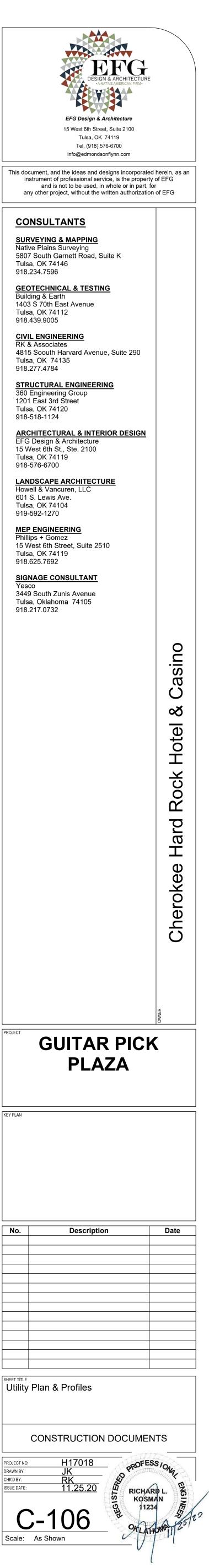


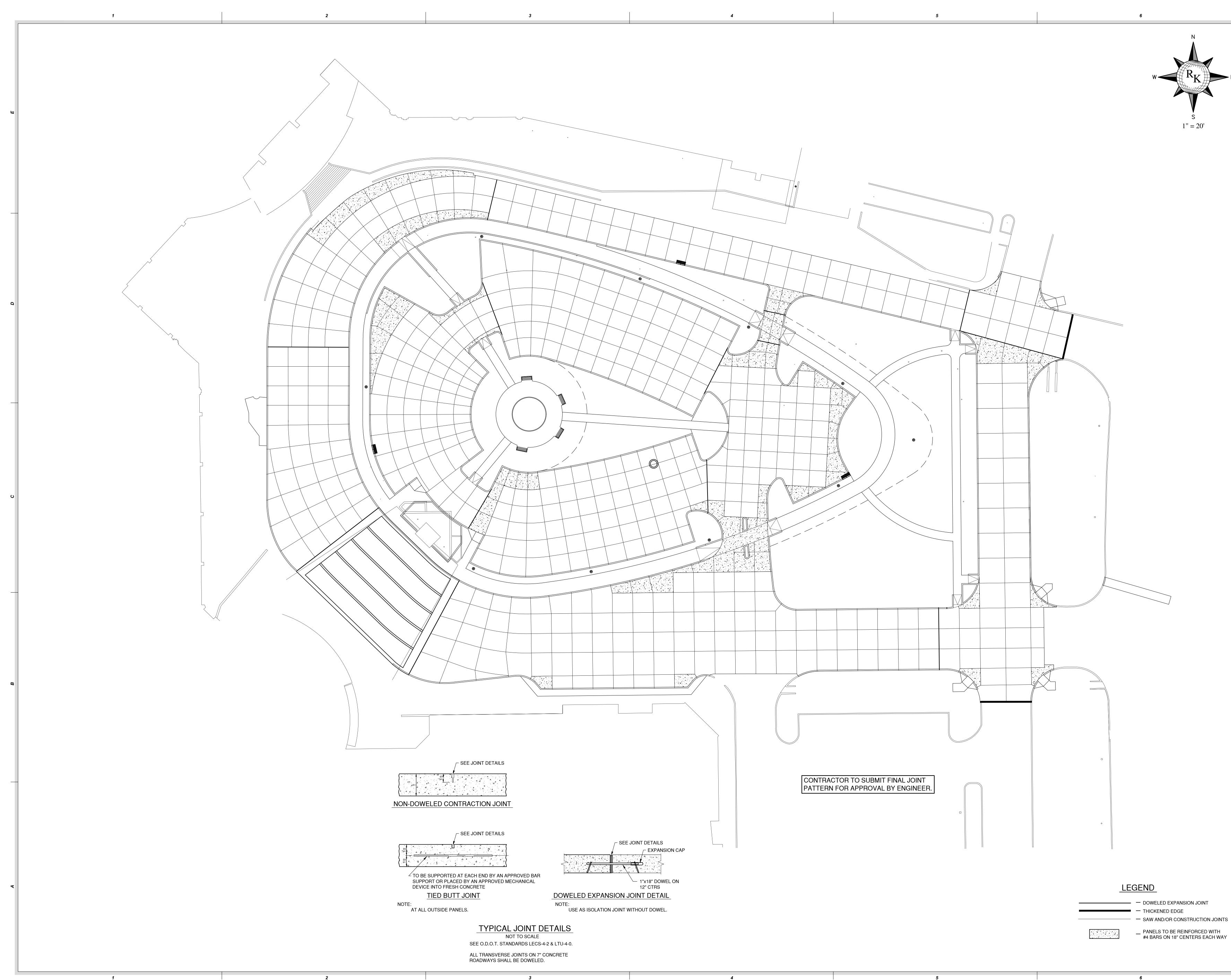
TEMPORARY ROCK CONSTRUCTION ENTRANCE/EXIT

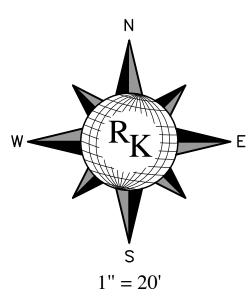


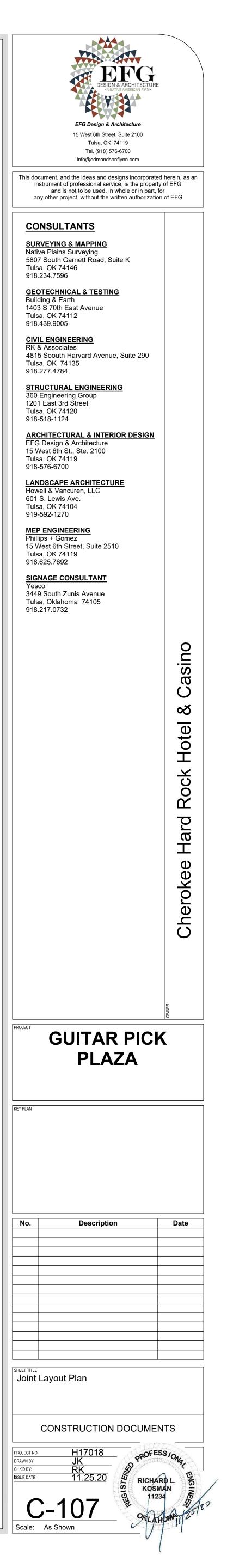


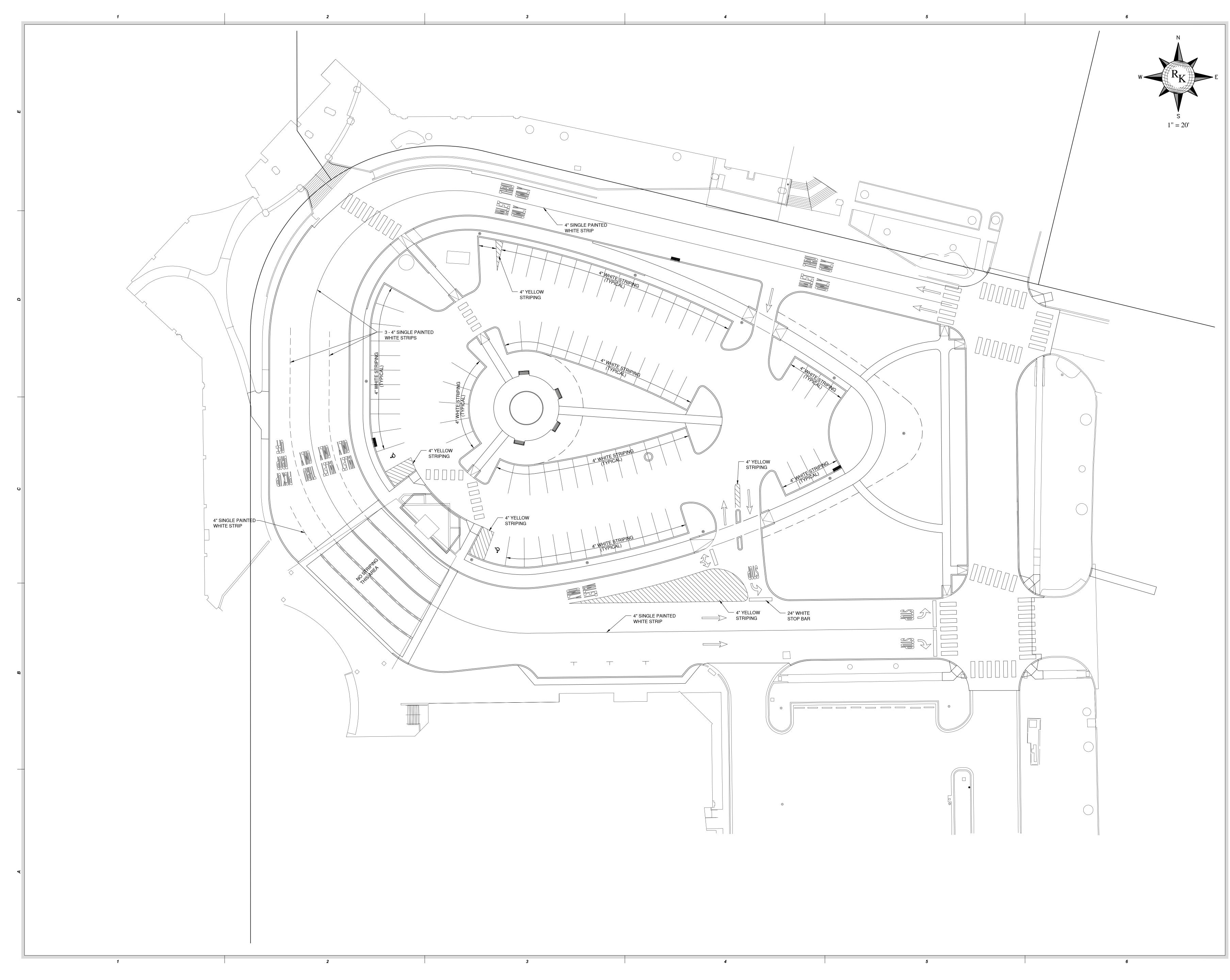




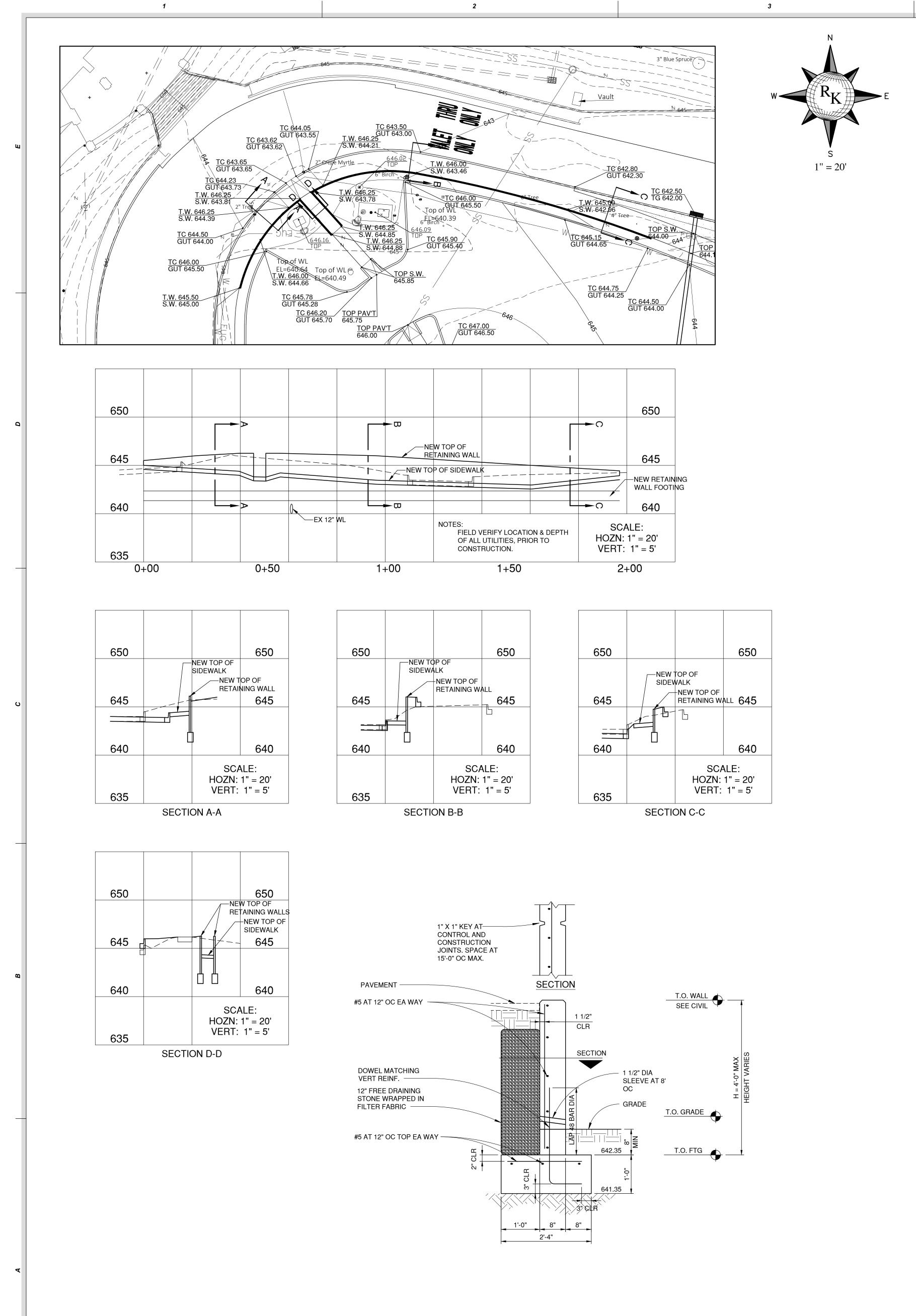


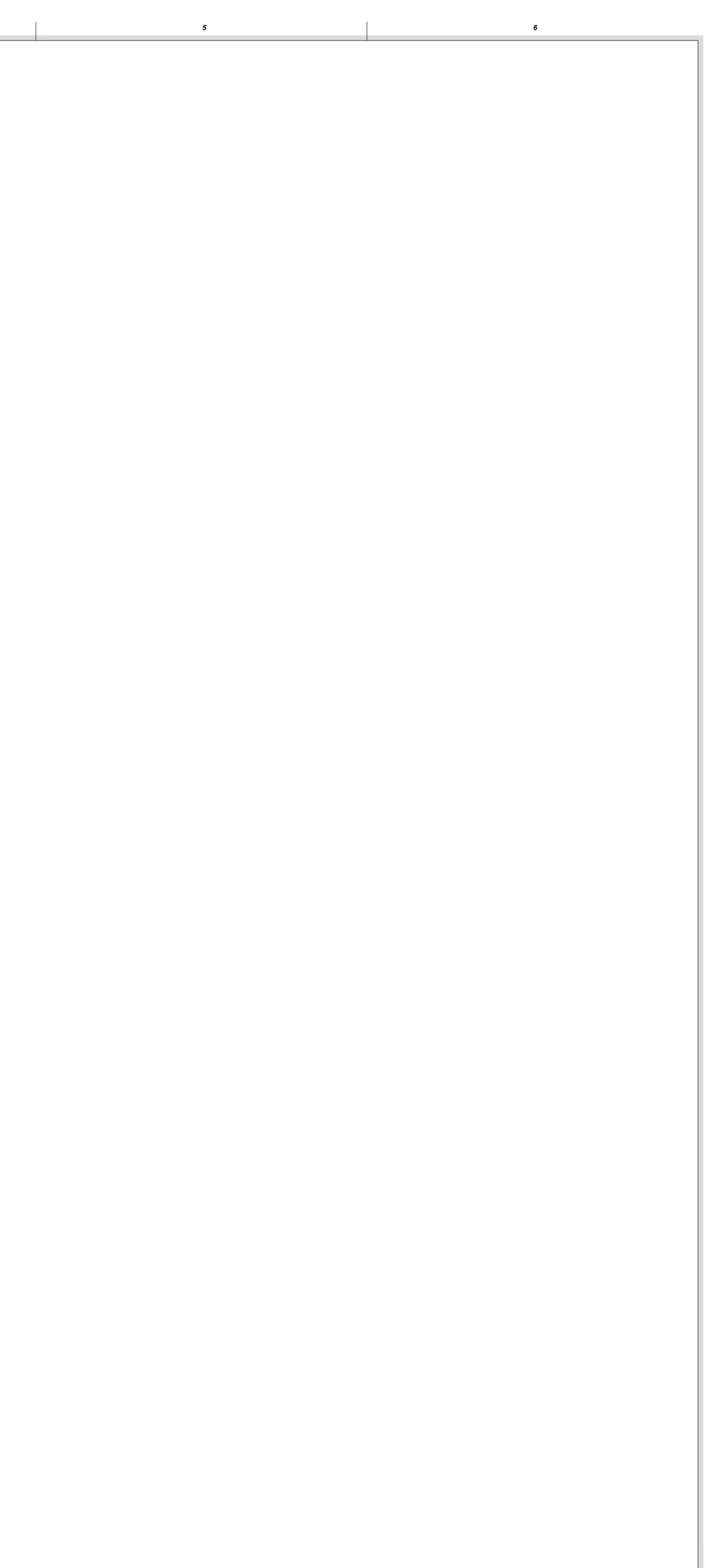


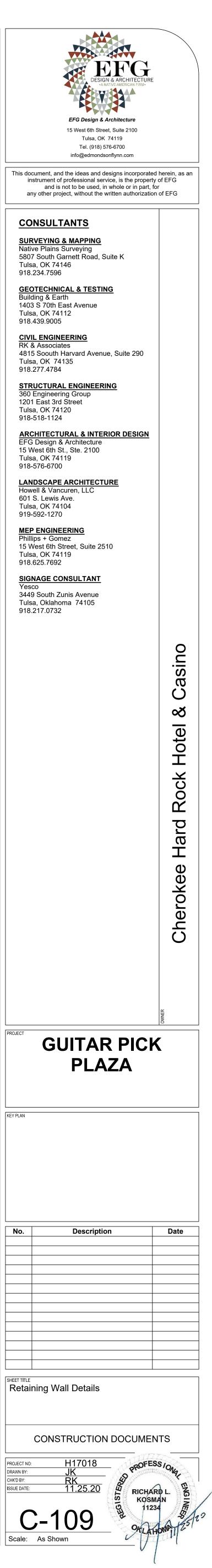


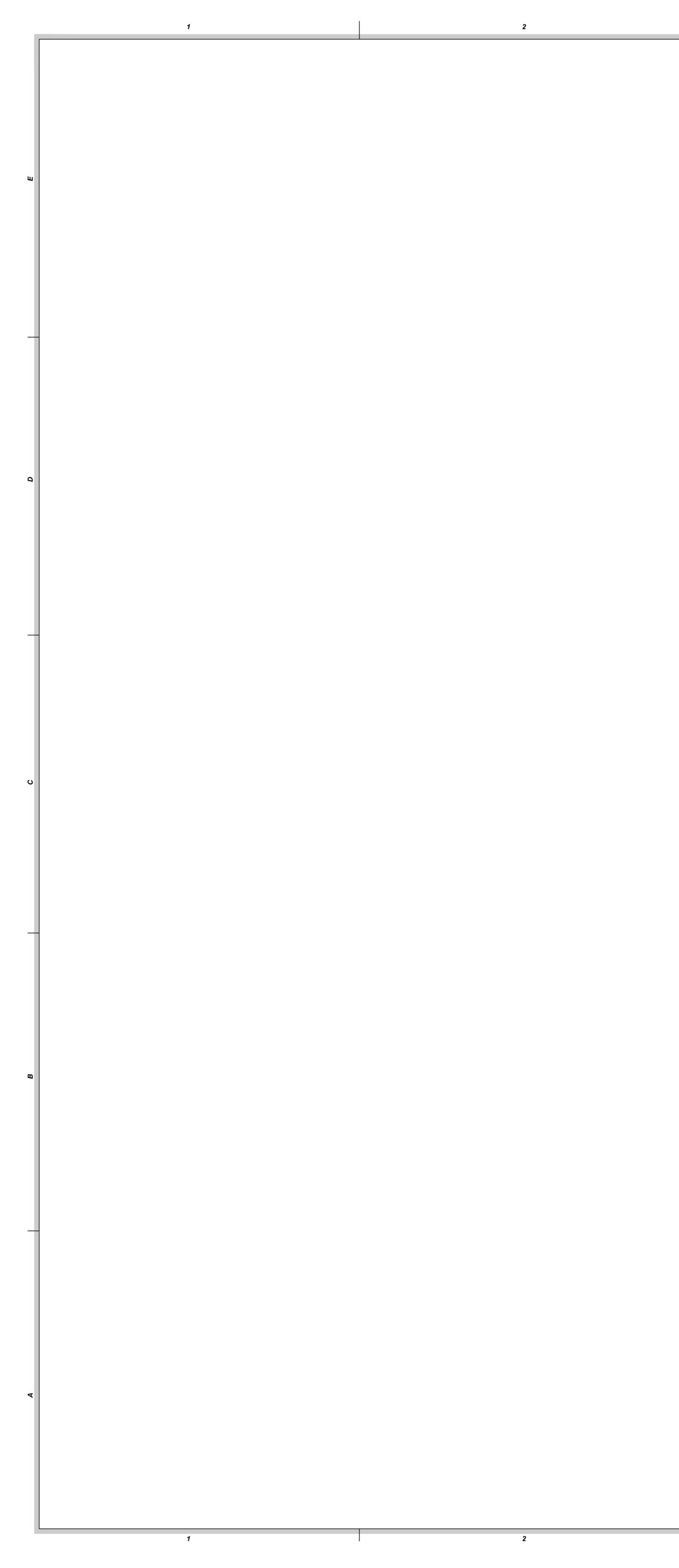












- 1. TOPSOIL: REUSE FROM STOCKPILE AND PROVIDE NEW TOPSOIL AS NEEDED
- TOPSOIL SHALL CONFORM TO THE FOLLOWING GRAIN SIZE DISTRIBUTION FOR MATERIAL PASSING THE #10 SIEVE:

VE SIZE I	NOMBER MINIMOM	IV
10	100	-
18	85	1
35	70	9
60	50	8
140	36	6
270	32	5
002MM	3	8

- SUB-GRADE CONTAMINATED WITH PETROLEUM PRODUCTS
- SUB-GRADE
- 12. REMOVE SURPLUS SUBSOIL AND TOPSOIL FROM SITE.

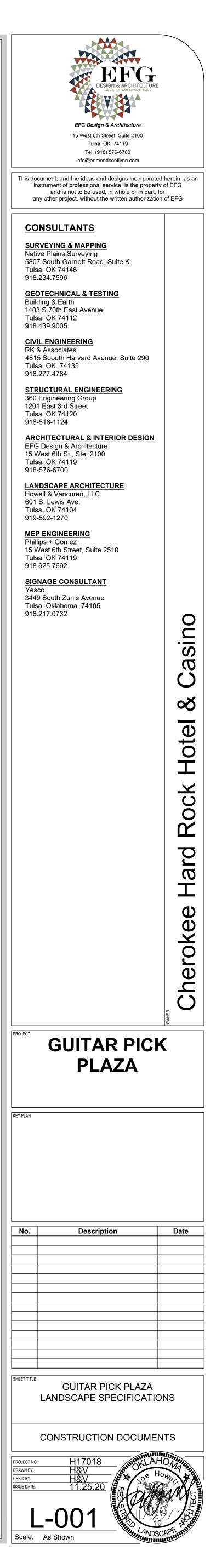
- VERIFY THAT PREPARED SOIL BASE IS READY TO RECEIVE THE WORK OF THIS SECTION.

- APPLICABLE
- PERIOD SHALL INCLUDE MINIMUM OF TWO MOWINGS.
- AND OTHER PAVED SURFACES.
- BECOME MUDDY OR HARD. IF IT HAS BECOME HARD, TILL TO A FRIABLE CONDITION AGAIN.
- 4 INCH DEPTH.
- OVERLAP SOD PIECES.
- SURFACE AS NECESSARY TO ACCOMPLISH ABOVE.
- MAXIMUM 2 FEET ON CENTER. DRIVE PEGS FLUSH WITH SOIL PORTION OF SOD.
- MINOR DEPRESSIONS AND IRREGULARITIES.
- ANY ONE MOWING.

- RESULTING FROM IMPROPER USE OF HERBICIDES.
- AWAY SHALL BE FILLED TO MATCH SPECIFIED GRADE WITH TOPSOIL BEFORE RESODDING. 29. PROTECT SODDED AREAS WITH WARNING SIGNS DURING MAINTENANCE PERIOD.
- GROWING SEASON.

LANDSCAPE GRADING & TOPSOII 10. MAINTENANCE SHALL INCLUDE MEASURES NECESSARY TO ESTABLISH AND MAINTAIN PLANTS IN A VIGOROUS AND HEALTHY GROWING CONDITION. INCLUDE THE FOLLOWING: A. CULTIVATION AND WEEDING OF PLANT BEDS AND TREE PITS. WHEN HERBICIDES ARE USED FOR WEED CONTROL, APPLY IN 2. IMPORTED TOPSOIL: FRIABLE LOAM, TYPICAL OF CULTIVATED TOPSOILS LOCALLY; FREE OF SUBSOIL, ROOTS, GRASS, EXCESSIVE AMOUNT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMEDY DAMAGE RESULTING FROM USE OF HERBICIDES OF WEEDS, STONE, AND FOREIGN MATTER; ACIDITY RANGE (PH) OF 6.0 TO 7.0; CONTAINING A MINIMUM OF 2 PERCENT AND A MAXIMUM OF B. WATERING SUFFICIENT TO MAINTAIN OPTIMUM MOISTURE LEVEL. 5 PERCENT ORGANIC MATTER. TOPSOIL SHALL NOT BE DELIVERED OR USED FOR PLANTING WHILE IN A FROZEN OR MUDDY CONDITION. C. PRUNING, INCLUDING REMOVAL OF DEAD OR BROKEN BRANCHES, AND TREATMENT OF PRUNE WOUNDS. D. DISEASE AND INSECT CONTROL. E. MAINTAINING PLANTS IN AN UPRIGHT, PLUMB POSITION, AND REPAIR OF SETTLING. PERCENT PASSING F. MAINTENANCE OF WRAPPINGS, GUYS, TURNBUCKLES AND STAKES. ADJUST TURNBUCKLES OR OTHERWISE KEEP U.S.SIEVE SIZE NUMBER MINIMUM MAXIMUM G. GUY WIRES TIGHT. REPAIR OR REPLACE ACCESSORIES WHEN REQUIRED. 10. MULCH: PINE BARK MULCH. CONTRACTOR TO SUBMIT TYPE AND SOURCE FOR APPROVAL BY OWNER'S REPRESENTATIVE. 11. FERTILIZER: OSMOCOTE SLOW RELEASE 18-6-12 12. SOIL ACIDIFIER: EQUAL TO TIGER 90 CR ORGANIC SULPHUR 0-0-0-90 13. COMPOST: BACK TO EARTH COMPOSTED COTTON BURRS AS SUPPLIED BY SOIL MENDER PRODUCTS, LP www.soilmender.com 14. METAL EDGING: 3/16 INCH X 4 INCH STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY COL-MET. 3333 MILLER PARK SOUTH, GARLAND, TEXAS 75042, PHONE 972/494-3900, WWW.COLMET.COM. EDGING TO BE SET VERTICAL WITH TOP EDGE 1 INCH ABOVE FINISHED GRADE. 15. WRAPPING MATERIALS: HEAVY PAPER MANUFACTURED FOR TREE WRAPPING PURPOSE. 3. SUBMIT SOURCE AND ANALYSIS OF TOPSOIL FOR BACKFILL. TEST TO BE PERFORMED BY ACCREDITED SOILS LABRATORY. SUBMITS SOILS 16. GREEN METAL FENCE POSTS (3 PER TREE) - 8 FOOT HEIGHT. TEST AND RECOMMENDATIONS FOR AMENDMENTS INCLUDING ADJUSTING SOIL pH TO A VALUE BETWEEN 6.0 AND 7.0. 17. HARDWARE (CABLES, WIRE, EYE BOLTS, AND TURNBUCKLES): NONCORROSIVE; OF SUFFICIENT STRENGTH TO WITHSTAND WIND 4. ELIMINATE UNEVEN AREAS AND LOW SPOTS. REMOVE DEBRIS, ROOTS, BRANCHES, STONES, IN EXCESS OF 1 INCH IN SIZE. REMOVE PRESSURE. 18. TIE STRAPS: SOFT POLYPROPYLENE MATERIAL EQUAL TO ARBORTIE, BY DEEP ROOT PARTNERS, L.P., 31 LANGSTON ST., SUITE 4, SAN 5. SCARIFY SUB-GRADE TO DEPTH OF 6 INCHES WHERE TOPSOIL IS SCHEDULED. REMOVE DEBRIS THAT IS BROUGHT TO THE SURFACE IN FRANCISCO, CA, 94103, 1-800-277-7668 EXCESS OF 1 INCH IN SIZE. 19. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. BERMUDA GRASS, IF PRESENT, TO BE EXTERMINATED BY APPROVED MEANS 6. REVIEW SUB-GRADE SCARIFICATION WITH OWNER'S REPRESENTATIVE PRIOR TO COMMENCING PLACEMENT OF TOPSOIL. OR ALL SOIL REMOVED TO 6 INCH DEPTH AND REPLACED WITH TOPSOIL FREE OF BERMUDA GRASS. 7. USE TOPSOIL IN RELATIVELY DRY STATE. PLACE DURING DRY WEATHER. 20. STAKE TREE LOCATIONS AND PLACE SHRUBS, VINES, AND GROUND COVERS FOR REVIEW AND FINAL ORIENTATION BY OWNER'S 8. FINE GRADE TOPSOIL OR PLANTING MIX ELIMINATING ROUGH OR LOW AREAS. MAINTAIN LEVELS, PROFILES, AND CONTOURS OF REPRESENTATIVE PRIOR TO INSTALLATION. 21. OUTLINE BED EDGES FOR APPROVAL BY OWNER'S REPRESENTATIVE. 9. REMOVE STONE, ROOTS, GRASS, WEEDS, DEBRIS, AND FOREIGN MATERIAL WHILE SPREADING. 22. EXCAVATE FOR PLANT MATERIALS. TREE PITS SHALL BE 8' IN DIAMETER. CIRCLE TO BE CENTERED ON TREE AND TRUE IN FORM. SLOPE 10. MANUALLY SPREAD TOPSOIL OR PLANTING MIX AROUND TREES. PLANTS. AND STRUCTURES. TO PREVENT DAMAGE. CUT EDGE TO 6" DEPTH AND BOTTOM OF PIT TO DEPTH REQUIRED TO ACCOMMODATE TREE ROOTBALL. SHRUB PITS SHALL BE 12 INCHES 11. LIGHTLY COMPACT PLACED TOPSOIL GREATER IN DIAMETER THAN ROOT BALL. TOPSOIL FROM EXCAVATION MAY BE RETAINED FOR BACKFILL IF IT IS FRIABLE AND FREE OF ROCK AND CLODS GREATER THAN 2" IN DIA. REMOVE ALL SUBSOIL, ROCK, AND DEBRIS FROM SITE. 13. LEAVE STOCKPILE AREA AND SITE CLEAN AND RAKED, READY TO RECEIVE LANDSCAPING. 23. SET TREES WITH TOP OF ROOT BALL 3 INCHES ABOVE SURROUNDING GRADE, AND OTHER PLANT MATERIALS 1 INCHES ABOVE 14. TOP OF TOPSOIL OR PLANTING MIX TOLERANCES: PLUS OR MINUS 1/2 INCH. SURROUNDING GRADE, AFTER SETTLEMENT. 15. REQUIRED TOPSOIL DEPTH FOR LANDSCAPE AREAS: 24. REMOVE CONTAINERS FROM CONTAINER-GROWN STOCK. SET PLANTS IN CENTER OF PITS AND BACKFILL WITH TOPSOIL IN 6 INCH A. LAWN AREAS: 6 INCHES MINIMUM TOPSOIL. LAYERS. PULL AWAY ROPES, WIRES, ETC. FROM THE TOP OF THE BALL B. PLANTING BEDS (SHRUBS, GROUNDCOVER, ETC.): 12 INCHES MINIMUM TOPSOIL. 25. REMOVE ANY SOIL FROM THE TOP OF THE ROOTBALL, TO THE LEVEL OF THE ROOT FLARE. 26. THOROUGHLY WATER SOIL WHEN THE HOLE IS HALF FULL, AND AGAIN WHEN FULL. 27. APPLY 1/2 POUND FERTILIZER EVENLY OVER CULTIVATED AREA AROUND EACH TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND SODDING GROUND COVER PLANTINGS. 28. AFTER PLANTING TREES, FORM A 3' DIAMETER RIDGE OF TOPSOIL AROUND EDGE OF EXCAVATION TO RETAIN WATER. 1. SOD: CULTIVATED GRASS SOD; WITH STRONG FIBROUS ROOT SYSTEM, FREE OF STONES, BURNED OR BARE SPOTS, AND WEEDS. 3. SUBMIT GRASS SPECIES AND LOCATION OF SOD SOURCE FOR APPROVAL IRRIGATION NOTES 4. DELIVER SOD ON PALLETS. PROTECT EXPOSED ROOTS FROM DEHYDRATION. 5. DO NOT DELIVER MORE SOD THAN CAN BE LAID WITHIN 24 HOURS. 1. IRRIGATION SYSTEM TO BE ELECTRIC SOLENOID CONTROLLED UNDERGROUND SPRINKLER SYSTEM CONSISTING OF PVC PLASTIC PIPE 6. COORDINATE THE WORK OF THIS SECTION WITH INSTALLATION OF UNDERGROUND SPRINKLER SYSTEM AND PLANT MATERIAL AS AND FITTINGS, WITH FIXED SPRAY AND VARIABLE ARC ROTARY POP-UP HEADS IN A MULTI-STATION ELECTRIC CONTROL SYSTEM, PROGRAMMED AS APPROVED BY OWNER'S REPRESENTATIVE. 7. MAINTAIN SODDED AREAS IMMEDIATELY AFTER PLACEMENT UNTIL GRASS IS WELL ESTABLISHED. HAS ACHIEVED COMPLETE COVERAGE 2. SUBMIT THE IRRIGATION DESIGN FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE NO LESS THAN TWO WEEKS PRIOR TO AND EXHIBITS A VIGOROUS GROWING CONDITION OR UNTIL DATE OF SUBSTANTIAL COMPLETION WHICHEVER IS LONGER. MAINTENANCE COMMENCING INSTALLATION OPERATIONS. THE DESIGN SHALL INCLUDE THE PIPING LAYOUT, LOCATION AND COVERAGE OF SPRINKLEF HEADS, NOZZLE SIZES AND TYPES, PLANT AND LANDSCAPING FEATURES, SITE STRUCTURES, LIST OF FITTINGS TO BE USED, AND CONTROL 8. FINISH GRADE AREAS TO BE SODDED SO THAT THE SURFACE IS SMOOTH AND IS APPROXIMATELY 1 INCH BELOW ADJOINING SIDEWALKS SYSTEM AND WIRING DIAGRAMS AND DATA; AND SHALL NOTE WATER PRESSURE AT THE PROJECT SITE. 3. UPON COMPLETION AND FINAL REVIEW OF SYSTEM BY OWNER'S REPRESENTATIVE, CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS 9. REMOVE ALL WEEDS AND GRASSES FROM AREAS TO BE SODDED. (REPRODUCIBLES) OF COMPLETED FACILITIES AS INSTALLED. DRAWINGS SHALL BE PROVIDED TO ARCHITECT IN A) ELECTRONIC FORM 10. PLANTING SURFACE SHALL BE MADE FRIABLE BY APPROVED METHOD OF SCARIFICATION. PREPARED SURFACE SHALL BE FLOATED (AUTOCAD 2010 FORMAT) B) THREE (3) COPIES OF THE AS-BUILT DRAWING IN BLUELINE OR PHOTOCOPY FORM. AS-BUILT DRAWING SHALL SMOOTH AND FREE OF BUMPS AND DEPRESSIONS. REMOVE STONES AND FOREIGN MATTER OVER 2 INCHES IN DIAMETER FROM TOP 2 SHOW THE MEASURED DISTANCE FROM EASILY IDENTIFIED, FIXED LOCATIONS TO ISOLATION VALVES, ELECTRIC CONTROL VALVES, INCHES OF SOD BED. PLANT IMMEDIATELY THEREAFTER, PROVIDED THE BED HAS REMAINED IN A FRIABLE CONDITION AND HAS NOT MANUAL DRAIN VALVES AND WIRE SPLICES. TWO DIMENSIONS FROM FIXED POINTS PER LOCATION ARE REQUIRED. 4. UPON COMPLETION AND FINAL REVIEW OF SYSTEM BY OWNER'S REPRESENTATIVE, CONTRACTOR SHALL PROVIDE THREE (3) BINDERS 11. APPLY FERTILIZER NO MORE THAN 48 HOURS BEFORE LAYING SOD. CONTAINING MANUFACTURER'S INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS AS WELL AS A PARTS BREAKDOWN AND 12. LIGHTLY WATER TO AID THE DISSIPATION OF FERTILIZER. CATALOG FOR EACH PIECE OF EQUIPMENT INSTALLED ON THE PROJECT. AS A MINIMUM THE BINDERS SHALL INCLUDE INFORMATION FOR 13. PRIOR TO LAYING SOD. INCORPORATE SOIL AMENDMENTS SUCH AS LIME AND SULPHUR AT RATES RECOMMENDED BY SOILS TESTS TO A THE IRRIGATION CONTROLLER, BOOSTER PUMP, BACKFLOW PREVENTER, PRESSURE REGULATORS, ISOLATION VALVES, ELECTRIC CONTROL VALVES. DRAIN VALVES. AIR RELIEF VALVES. ALL SPRAY AND ROTARY SPRINKLER HEADS. RAIN AND FREEZE AND MOISTURE 14. MOISTEN PREPARED SURFACE IMMEDIATELY PRIOR TO LAYING SOD. SENSORS. 15. LAY SOD IMMEDIATELY ON DELIVERY TO SITE WITHIN 24 HOURS AFTER HARVESTING TO PREVENT DETERIORATION. 5. IRRIGATION CONTRACTOR TO PROVIDE A RECOMMENDED SCHEDULE FOR RUN TIMES AND FREQUENCY OF WATERING FOR THE FIRST TWO 16. LAY SOD TIGHT WITH NO OPEN JOINTS VISIBLE AND NO OVERLAPPING: STAGGER END JOINTS 12 INCHES MINIMUM. DO NOT STRETCH OR WEEKS, THE FIRST TWO MONTHS, AND THE FIRST TWELVE MONTHS (INCLUDING ALL SEASONAL CHANGE REQUIREMENTS) AFTER COMPLETION OF ENTIRE SYSTEM. 17. FINISHED SODDING TO BE SMOOTH AND FREE OF BUMPS AND DEPRESSION. SURFACE TO BE FLUSH WITH ADJOINING GRASS AREAS IF 6. CONTRACTOR TO INSTRUCT OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF ENTIRE SYSTEM INCLUDING ADJUSTING OF ANY. PLACE TOP ELEVATION OF SOD APPROXIMATELY 1/2 INCH BELOW ADJOINING EDGING, PAVING AND CURBS. GRADE PLANTING SPRINKLER HEADS. 7. CONTRACTOR TO INSPECT IRRIGATION SYSTEM AT TWO AND FOUR WEEKS AFTER DATE OF SUBSTANTIAL COMPLETION AND MAKE 18. ON SLOPES 4 INCHES PER FOOT AND STEEPER, LAY SOD PERPENDICULAR TO SLOPE AND SECURE EVERY ROW WITH WOODEN PEGS AT NECESSARY ADJUSTMENTS. 8. ENTIRE IRRIGATION SYSTEM TO BE UNCONDITIONALLY GUARANTEED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP. INCLUDING 19. WATER SODDED AREAS DEEPLY IMMEDIATELY AFTER INSTALLATION. REPAIR OF SETTLING OF BACKFILLED AREAS BELOW GRADE AND ADJUSTING HEADS TO PROPER LEVEL FOR A PERIOD OF ONE YEAR FROM 20. AFTER SOD AND SOIL HAVE DRIED SUFFICIENTLY, ROLL SODDED AREAS TO INSURE GOOD BOND BETWEEN SOD AND SOIL AND TO REMOVE DATE OF SUBSTANTIAL COMPLETION. 9. ALL MINOR ADJUSTMENTS, ANY DEFECTIVE ELECTRICAL CONTROL VALVES, SPRINKLER HEADS OR OTHER WORKING PARTS SHALL BE 21. SODDED AREAS TO BE VIGOROUSLY GROWING AT TIME OF FINAL ACCEPTANCE OR IF INSTALLATION OCCURS DURING DORMANCY REPAIRED OR REPLACED WITHOUT COST TO THE OWNER FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION. WARRANTY TO EXTEND THROUGH FIRST MONTH OF FOLLOWING GROWING SEASON. AT CONCLUSION OF INITIAL WARRANTY PERIOD 10. ALL DAMAGE BY OTHERS DURING THE ONE-YEAR GUARANTEE PERIOD WILL BE OWNER'S RESPONSIBILITY. REPLACE DEAD OR UNHEALTHY SOD. 11. ALL MATERIALS TO BE INCORPORATED IN THIS SECTION BE NEW AND OF THE BEST QUALITY MEETING. 22. MOW GRASS AT REGULAR INTERVALS TO MAINTAIN AT A MAXIMUM HEIGHT OF 2-1/2". DO NOT CUT MORE THAN 1/3 OF GRASS BLADE AT 12. ACCEPTABLE MANUFACTURERS: A. RAINBIRD 23. NEATLY TRIM EDGES AND HAND CLIP WHERE NECESSARY. B. WEATHER-MATIC 24. IMMEDIATELY REMOVE CLIPPINGS AFTER MOWING AND TRIMMING C. HUNTER 25. WATER SUFFICIENTLY TO INSURE ESTABLISHMENT AND MAINTAIN VIGOROUS APPEARANCE. D. TORO 26. ROLL AND/OR TOPDRESS SURFACE AS NEEDED TO REMOVE MINOR DEPRESSIONS OR IRREGULARITIES. 13. MAINLINE PIPING: SIZE AS INDICATED ON PLANS AT 18" MINIMUM DEPTH 27. CONTROL GROWTH OF WEEDS. APPLY HERBICIDES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMEDY DAMAGE 14. LATERAL PIPING: ALL LATERAL PIPES, DOWNSTREAM OF THE CONTROL VALVES, SHALL BE HAVE SOLVENT WELD JOINTS AND SHALL MEET THE LATEST REQUIREMENTS OF ASTM D 2241 STANDARD SPECIFICATION FOR POLY (VINYL CHLORIDE) (PVC) PLASTIC PIPE WITH 28. IMMEDIATELY REPLACE SOD IN AREAS WHICH SHOW DETERIORATION OR BARE SPOTS. ANY AREAS THAT HAVE HAD TOPSOIL WASHED STANDARD DIMENSION RATIO (SDR) OF 21 AND A PRESSURE RATING (PR) OF 200 PSI. LATERAL PIPING TO BE INSTALLED AT 12" MINIMUM DEPTH. 15. DRIP IRRIGATION: PIPE AND FITTINGS EQUAL TO RAINBIRD 30. APPLY APPROVED FERTILIZER AT RATE TO PROVIDE 1-1/2 POUNDS OF ACTUAL NITROGEN PER 1000 SQUARE FEET EVERY 25 DAYS DURING 16. ALL PIPING TO HAVE MAXIMUM VELOCITIES OF FIVE FEET PER SECOND. 17. VALVE BOXES FOR AUTOMATIC CONTROL VALVES TO BE EQUAL TO CARSON INDUSTRIES MODEL 1419-3 WITH 1419-6X EXTENSIONS. 31. FOR THE PURPOSE OF ESTABLISHING AN ACCEPTABLE STANDARD, NO BARE AREAS WILL BE PERMITTED 18. SET VALVE BOX COVERS LEVEL AT FINISH GRADE. RECTANGULAR VALVE BOXES TO BE PLACED PARALLEL TO NEARBY CURBS AND WALKS OR OTHER IMPROVEMENTS. VALVES AND VALVE BOXES SHALL BE INSTALLED WHERE SHOWN OR DIRECTED, AND SHALL BE SET PLUMB. VALVE BOXES SHALL BE CENTERED ON THE VALVES. WHERE FEASIBLE, VALVES SHALL BE LOCATED OUTSIDE THE AREA OF NATURAL PLANTING WALKWAYS OR PATHS AND SHALL BE PLACED IN GROUNDCOVER AREAS WHERE POSSIBLE. EARTH FILL SHALL BE CAREFULLY TAMPED AROUND EACH VALVE BOX. VALVE BOXES SHOULD BE SUPPORTED OR BLOCKED SUCH THAT ANY SURFACE LOADS ON THE VALVE BOXES . WORK REQUIRED IN THIS SECTION TO BE PERFORMED BY EXPERIENCED PERSONNEL UNDER DIRECTION OF A SKILLED FOREMAN. WILL NOT BE TRANSMITTED BELOW TO THE PIPE OR VALVES. WASHED GRAVEL SUMPS SHALL BE PROVIDED BELOW ALL VALVE BOXES TO 2. CONTRACTOR SHALL LOCATE ALL MATERIALS AND BE RESPONSIBLE FOR CONFORMANCE WITH REQUIREMENTS OF THIS SECTION. ALL PERMIT DRAINAGE OF WATER AWAY FROM VALVES. MINIMUM DEPTH OF GRAVEL SUMP IS 8 INCHES. PLANTS NOT MEETING REQUIREMENTS SHALL BE REJECTED 19. ABOVE GRADE BACKFLOW PREVENTERS TO BE IN FIBERGLASS ENCLOSURE EQUAL TO "HOT BOX" MANUFACTURED BY NORTHEAST FLORIDA 3. ALL TREES TO BE REVIEWED BY OWNER'S REPRESENTATIVE PRIOR TO PLANTING ENTERPRISES, INC. 1/800-736-0238. PLACE ON CONCRETE SLAB AND ANCHOR WITH 4 BOLTS. SIZE TO FIT BACKFLOW PREVENTER. PROVIDE A. TREES WILL BE REVIEWED AT LOCAL GROWING OR NURSERY BY OWNER'S REPRESENTATIVE AND APPROVED BEFORE DELIVERING ELECTRICAL CONNECTION FOR HEATER CABLE AS RECOMMENDED BY ENCLOSURE MANUFACTURER. TO THE SITE. CONTRACTOR SHALL SCHEDULE REVIEW OF PLANT MATERIAL IN SUCH A MANNER THAT NO SINGLE REVIEW PERIOD 20. WIRE FOR COMMUNICATION BETWEEN THE CONTROLLER AND DECODERS SHALL BE 14-2 GAUGE MAXI-CABLE AS REQUIRED FOR THE WILL EXCEED ONE WORKING DAY WITH A MAXIMUM OF TWO REVIEW PERIODS. CONTRACTOR SHALL BE RESPONSIBLE FOR DECODER SYSTEM. NOTIFICATION AND COORDINATION WITH ALL PARTIES PRIOR TO SCHEDULING. 21. ENVIRONMENTAL SENSORS TO BE EQUAL TO RAINBIRD WR2 RAIN/FREEZE SENSOR. MOUNT SENSOR AT INCONSPICUOUS LOCATION 4. ALL PLANT MATERIAL SHALL BE TRUE TO NAME, IN GOOD HEALTH, FREE OF DISEASE AND INSECTS, EXCELLENT IN FORM AND IN APPROVED BY OWNER'S REPRESENTATIVE USING MANUFACTURER'S RECOMMENDATIONS. CONFORMANCE WITH ANSI Z60. SPECIES AND SIZE IDENTIFIED ON PLANT LIST. ALL PLANTER MATERIALS TO BE NURSERY GROWN. 22. CONTRACTOR SHALL PROVIDE A BOOSTER PUMP TO INCREASE THE WATER PRESSURE WHERE NECESSARY TO PROVIDE DESIGNED 5. B&B PLANTS TO BE MOVED WITH SOLID BALLS WRAPPED IN BURLAP. PLANTS TO BE LIFTED ONLY BY BALL OR CONTAINER PRESSURE. THE FINAL BOOSTER PUMP STATION DESIGN CRITERIA WILL DEPEND ON THE DESIGN REQUIREMENTS FOR PROJECT AS WELL 6. DELIVER PLANT MATERIALS IMMEDIATELY PRIOR TO PLACEMENT. KEEP PLANT MATERIALS NOT IMMEDIATELY INSTALLED MOIST AND AS THE STATIC WATER PRESSURE AT THE TIME OF PROJECT CONSTRUCTION. CONTRACTOR SHALL CONSULT WITH OWNER OR HIS PROTECT FROM FREEZING BY COVERING BALL OR CONTAINER WITH MULCH. ANY PLANTS NOT PLANTED WITHIN 2 DAYS OF DELIVERY ARE REPRESENTATIVE BEFORE ORDERING THE BOOSTER PUMP. TO BE HEELED-IN IN A VERTICAL POSITION, ROOT BALLS FULLY ENCOMPASSED BY MULCH AND A TEMPORARY WATERING SYSTEM 23. INSTALL AUTOMATIC DRAIN VALVES AT ALL LOW SECTIONS OF LATERAL PIPING (LINES DOWNSTREAM FROM VALVES) TO ENSURE INSTALLED. COMPLETE DRAINAGE OF SYSTEM WHEN NOT IN USE. WRAP EACH VALVE WITH APPROVED FILTER FABRIC. MINIMUM OF TWO DRAINS PER 7. WARRANT ALL PLANTS TO BE LIVING, HEALTHY SPECIMENS FOR A PERIOD OF ONE YEAR COMMENCING UPON DATE OF SUBSTANTIAL ZONE. COMPLETION. WARRANTY PERIOD SHALL TERMINATE ONLY IF PLANTS HAVE BEEN IN FULL LEAF FOR 30 DAYS AT END OF WARRANTY 24. UPON COMPLETION OF THE IRRIGATION SYSTEM INSTALLATION INCLUDING ALL PRESSURE TESTS, CONTRACTOR SHALL CONDUCT A PERIOD. TERMINATION OF WARRANTY PERIOD SHALL BE EXTENDED AS NECESSARY TO COMPLY. ALL MATERIALS TO BE IN VIGOROUS

- CONDITION AT END OF WARRANTY PERIOD.
- 8. IMMEDIATELY REMOVE DEAD PLANTS AND PLANTS NOT IN A VIGOROUS CONDITION AND REPLACE AS SOON AS WEATHER CONDITIONS PERMIT. EACH REPLACEMENT SHALL BE COVERED WITH ONE YEAR WARRANTY COMMENCING AT TIME OF PLANTING. REPLACEMENTS TO MATCH ADJACENT PLANTS OF THE SAME SPECIES IN SIZE AND FORM.
- 9. CONTRACTOR TO BEGIN MAINTENANCE OF PLANT MATERIAL IMMEDIATELY AFTER PLANTING AND CONTINUE UNTIL 60 DAYS PAST DATE OF SUBSTANTIAL COMPLETION
- PERFORMANCE TEST OF THE COMPLETE SYSTEM TO INSURE THAT ALL COMPONENTS ARE FUNCTIONING PROPERLY. PERFORMANCE TEST SHALL CONSIST OF OPERATING THE SYSTEM THROUGH A COMPLETE IRRIGATION CYCLE PER DAY FOR TWO (2) CONSECUTIVE DAYS. CONTRACTOR SHALL BE AT THE SITE TO MONITOR THE PERFORMANCE TESTS AND MAKE ANY ADJUSTMENTS AND CORRECTIONS AS NEEDED DURING THE TESTING PERIOD.





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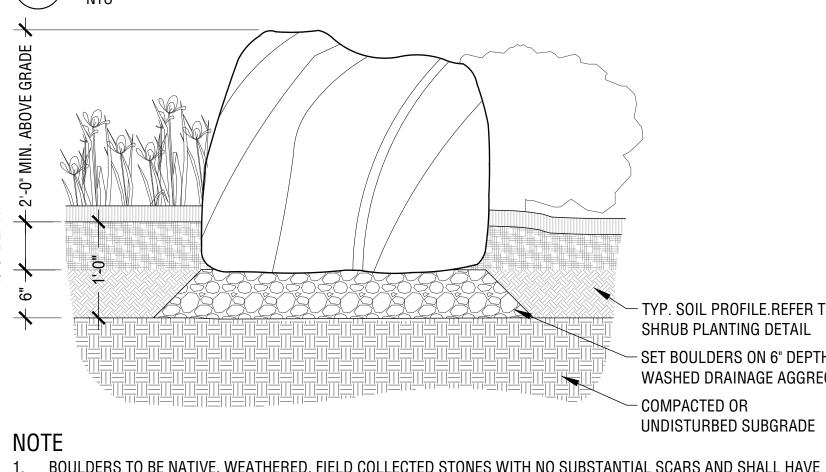
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- 1. CONTRACTOR TO ASCERTAIN LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO EXCAVATION AND BE RESPONSIBLE FOR
- DAMAGE RESULTING FROM PLANTING OPERATIONS. REPAIRS SHALL BE MADE AT NO COST TO THE OWNER 2. ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THE SURVEY. CONTACT THE LOCAL UTILITY LOCATION SERVICES
- 3. ALL AREAS NOTED AS "LAWN" ON PLAN, AND ALL OTHER AREAS ON SITE WHICH ARE NOT OTHERWISE DESIGNATED AND ARE
- 5. FINISH GRADE FOR SHRUB, GROUND COVER, AND LAWN AREAS SHALL BE HELD 1" BELOW TOP OF ADJACENT PAVEMENT AND
- 6. FIELD STAKE LOCATIONS OF PROPOSED TREES AND LAYOUT OF PLANTING BEDS FOR REVIEW AND APPROVAL BY OWNER'S
- 7. BOULDERS TO BE NATIVE, WEATHERED, FIELD-COLLECTED STONES WITH NO SUBSTANTIAL SCARS AND SHALL HAVE SIGNIFICANT COVERAGE OF LICHENS AND/OR MOSS. DIMENSIONS OF BOULDERS SHALL RANGE FROM .5 TONS TO 2 TONS, WITH 50% OF THE BOULDERS BEING ONE TON OR OVER. BOULDERS TO BE PARTIALLY BURIED TO SIMULATE A NATURAL CONDITION. DEPTH OF BOULDERS TO BE BURIED TO AVERAGE 1/3 OF HEIGHT OR AS NEEDED TO SIMULATE A NATURAL LOCATION AND ORIENTATION OF BOULDERS TO BE APPROVED BY THE OWNER'S REPRESENTATIVE. PLACED
- 9. BY SUBMITTING A BID, THE CONTRACTOR ACKNOWLEDGES HAVING VISITED THE SITE AND BECOME FAMILIAR WITH THE

r lan i	LIJ			ROOT	
KEY	QUAN	UNIT	NAME	BALL	REMARKS
ABE GRA	81	EA.	ABELIA x GRANDIFLORA 'ROSE CREEK' ROSE CREEK ABELIA	#5C	3'-0" 0.C.
BER GEN	33	EA.	BERBERIS THUNBERGII 'GENTRY' ROYAL BURGUNDY BARBERRY	#5C	3'-0" 0.C.
BUX WIN	184	EA.	BUXUS MICROPHYLLA 'WINTERGREEN' WINTERGREEN BOXWOOD	#5C	1'-6" 0.C.
BUX MOU	304	EA.	BUXUS x 'GREEN MOUNTAIN' GREEN MOUNTAIN BOXWOOD	#5C	2-0" 0.C.
CAL ACU	31	EA.	CALAMAGROSTIS x ACUTIFLORA 'KARL FOERSTER' KARL FOERSTER GRASS	#5C	2-0" O.C.
ECH MAG	176	EA.	ECHINACEA PURPUREA 'MAGNUS' MAGNUS PURPLE CONEFLOWER	#1C	1'-6" 0.C.
JUN SAB	90	EA.	JUNIPERUS SABINA 'SCANDIA' SCANDIA JUNIPER	#3C	3'-0" 0.C.
JUN GRE	54	EA.	JUNIPERUS VIRGINIANA 'GREY OWL' GREY OWL JUNIPER	#5C	3'-6" 0.C.
LEU SNO	37	EA.	LEUCANTHEMUM x SUPERBUM 'SNOWCAP' SNOWCAP SHASTA DAISY	#1C	1'-6" 0.C.
LIR ROY	231	EA.	LIRIOPE MUSCARI 'ROYAL PURPLE' ROYAL PURPLE LIRIOPE	#1C	1'-0" 0.C.
LIR VAR	461	EA.	LIRIOPE MUSCARI 'VARIEGATA' VARIEGATED LIRIOPE	#1C	1'-0" 0.C.
NEP FAA	28	EA.	NEPETA FAASSENII 'WALKERS LOW' WALKERS LOW CATMINT	#3C	2-0" O.C.
SAL CHE	52	EA.	SALVIA GREGGII 'CHERRY QUEEN' CHERRY QUEEN AUTUMN SAGE	#3C	2-6" O.C.
SED BLU	109	EA.	SEDUM REFLEXUM 'BLUE SPRUCE' BLUE SPRUCE SEDUM	#1C	1'-6" 0.C.
SED ANG	388	EA.	SEDUM RUPESTRE 'ANGELINA' ANGELINA SEDUM	#1C	1'-6" 0.C.
SPI LIT	58	EA.	SPIREA JAPONICA 'LITTLE PRINCESS' LITTLE PRINCESS SPIREA	#3C	3'-0" O.C.

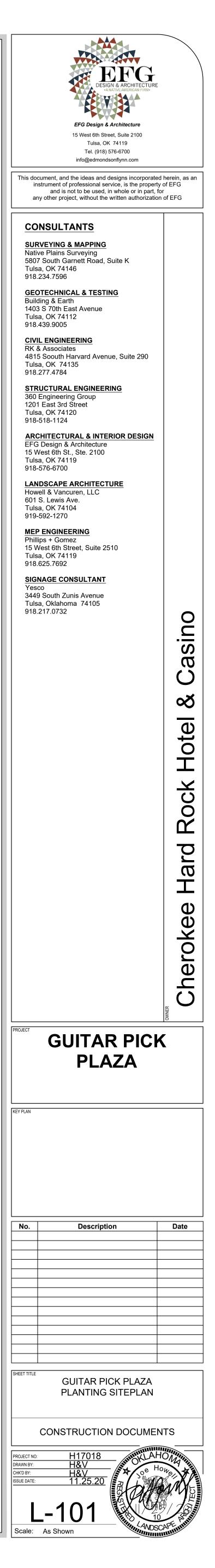
1. O.C.: INDICATES APPROXIMATE SPACING TO BE EQUAL ON CENTER. SHALL BE CONSIDERED GENERAL GUIDELINE ONLY

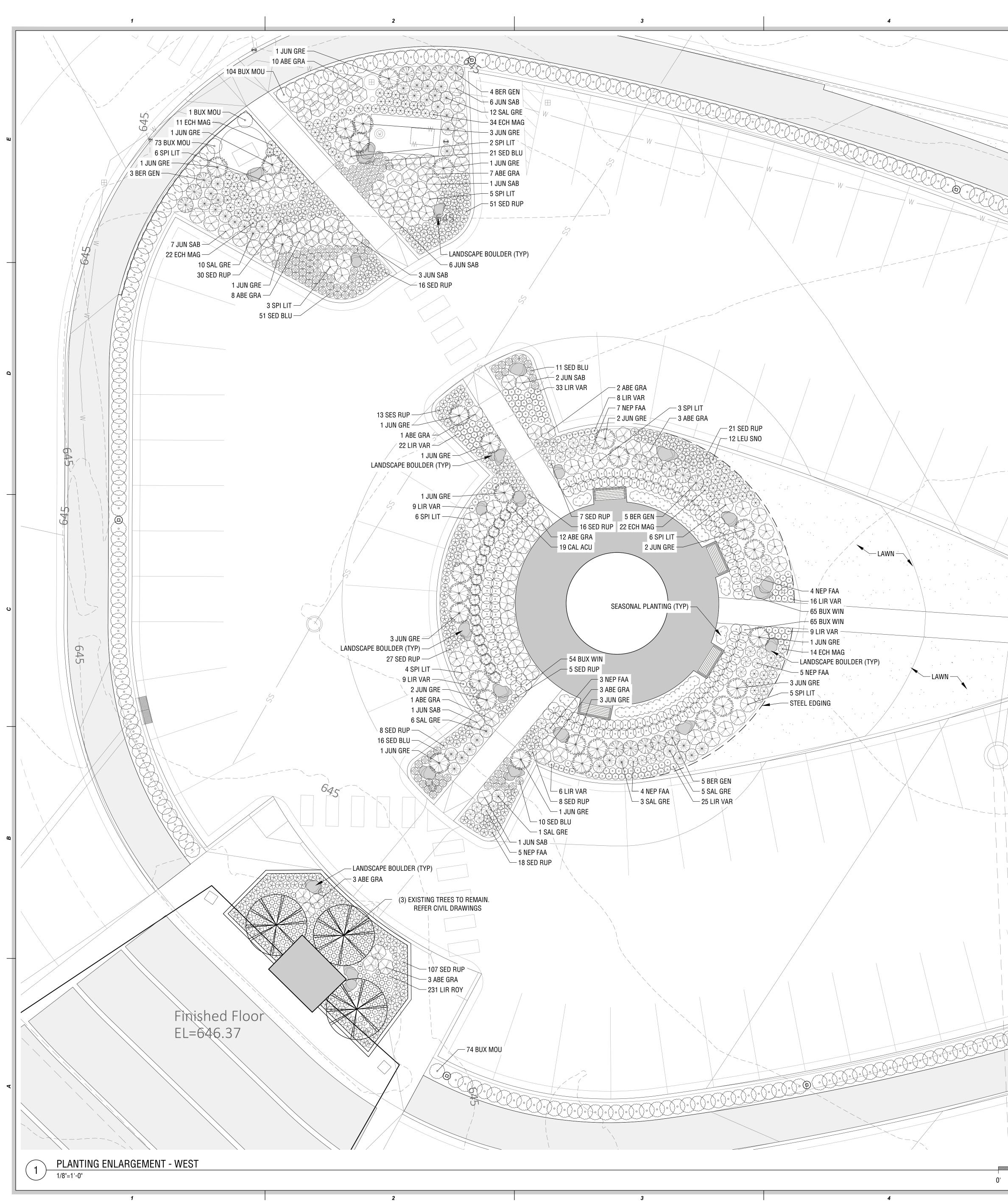
- MATCHED: SIZE AND OTHER PHYSICAL CHARACTERISTICS TO BE SIMILAR. ALL DIMENSIONS TO BE WITHIN 5% RANGE. QUANTITIES ON PLANT LIST ARE FOR CONVENIENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR ALL PLANTS SHOWN ON PLANTING PLANS AND COVERAGE OF ALL AREAS DELINEATED. WHEN DISCREPANCIES OCCUR BETWEEN PLANT LIST

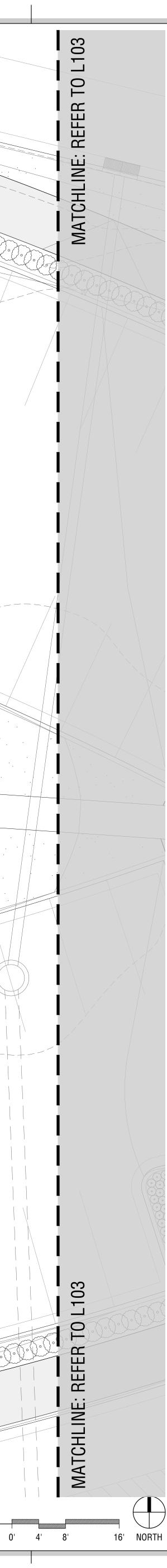


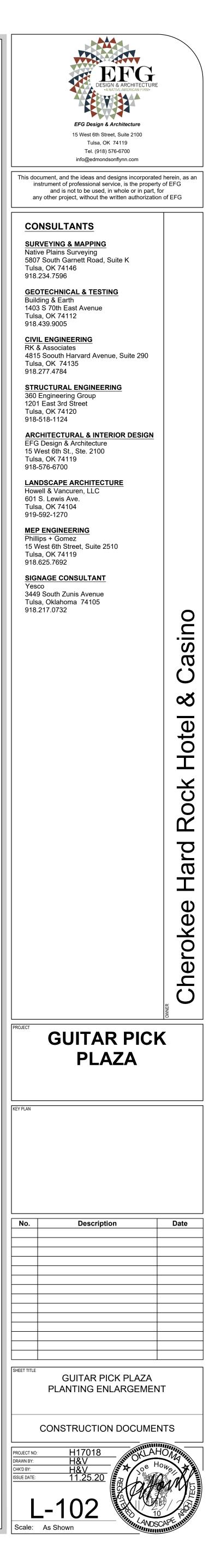
- TYP. SOIL PROFILE.REFER TO SHRUB PLANTING DETAIL - SET BOULDERS ON 6" DEPTH WASHED DRAINAGE AGGREGATE COMPACTED OR

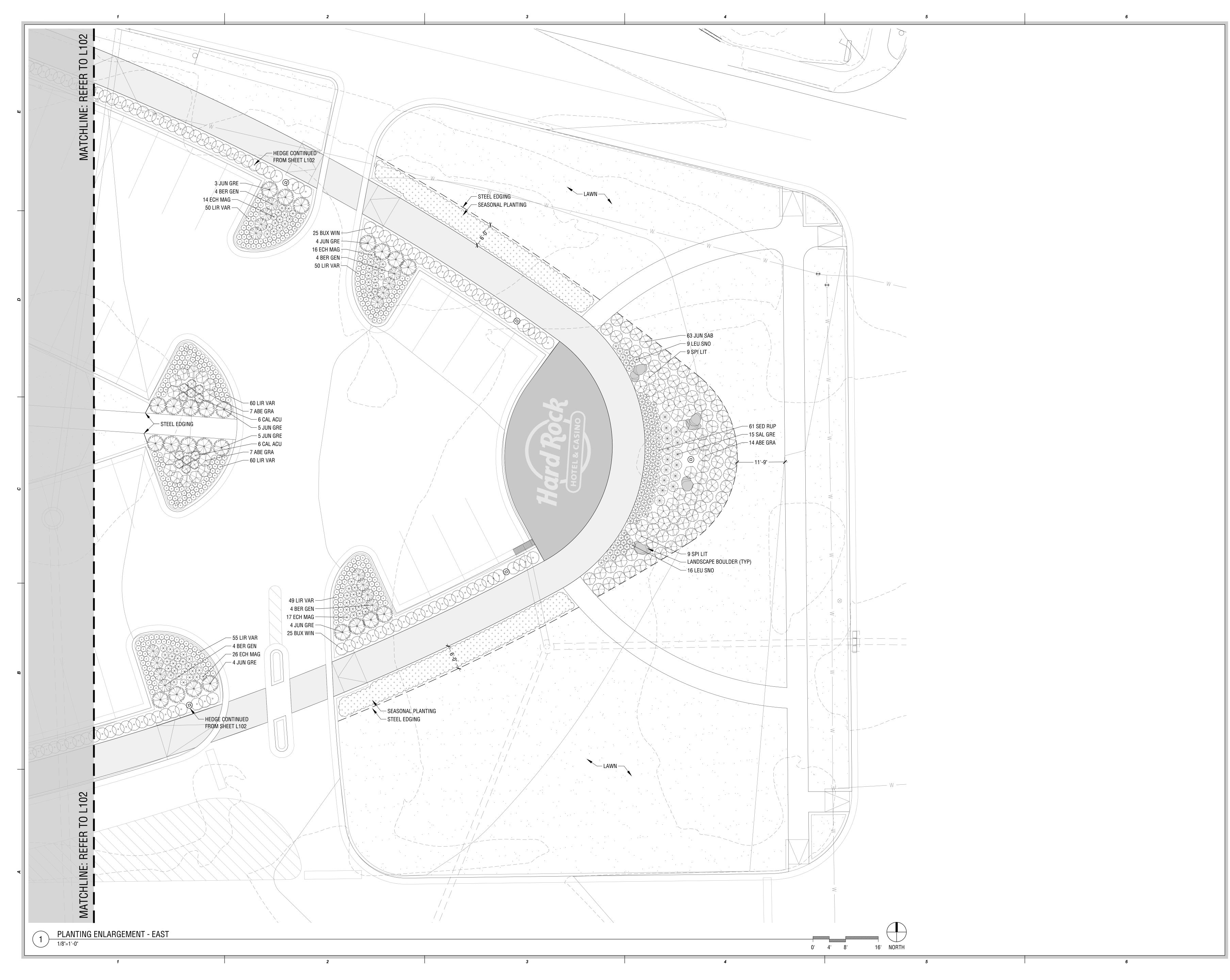
- 1. BOULDERS TO BE NATIVE, WEATHERED, FIELD COLLECTED STONES WITH NO SUBSTANTIAL SCARS AND SHALL HAVE SIGNIFICANT COVERAGE OF LICHENS AND/OR MOSS.
- 2. BOULDERS TO BE 2'-6" MINIMUM HEIGHT. LENGTH AND WIDTH TO VARY FROM 2-4 FEET. 3. BOULDERS SHALL BE BURIED TO SIMULATE A NATURAL CONDITION WITH LITTLE TO NO GAPS AT THE BASE.
- 4. BOULDER WEIGHTS TO VARY FROM 1500 3000 LBS WITH 50% OF ALL BOULDERS SHALL WEIGH IN EXCESS OF 2000 LBS. 5. CONTRACTOR SHALL PROVIDE PHOTOS OF BOULDERS FOR APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO DELIVERY. 6. CONTRACTOR SHALL STAKE PROPOSED LOCATIONS OF BOULDERS FOR APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO DELIVERY.
- 7. BOULDERS TO BE SPACED 5' CLEAR OF WALLS, BOLLARDS, COLUMNS, LIGHT POLES, HYDRANTS, ETC. 8. CONTRACTOR SHALL PROTECT BOULDERS FROM DAMAGE BY ALL CONSTRUCTION. IF DAMAGED BY PROJECT
- CONSTRUCTION, OWNER MAY REQUEST BOULDER REPLACEMENT AT NO COST ADDITIONAL TO OWNER. TYPICAL LANDSCAPE BOULDER (3
 - NTS

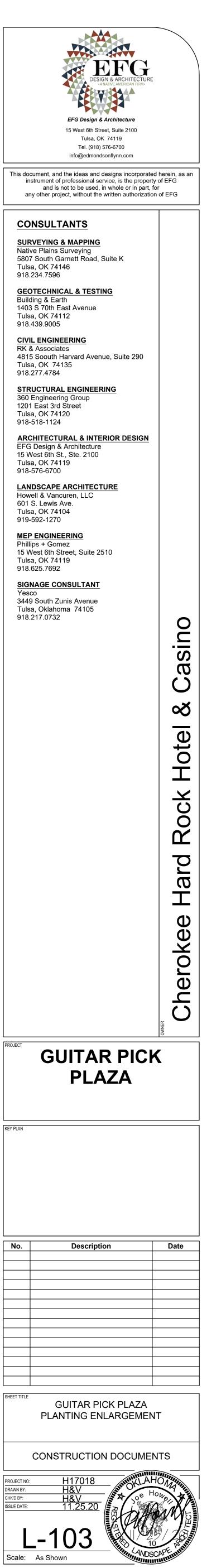


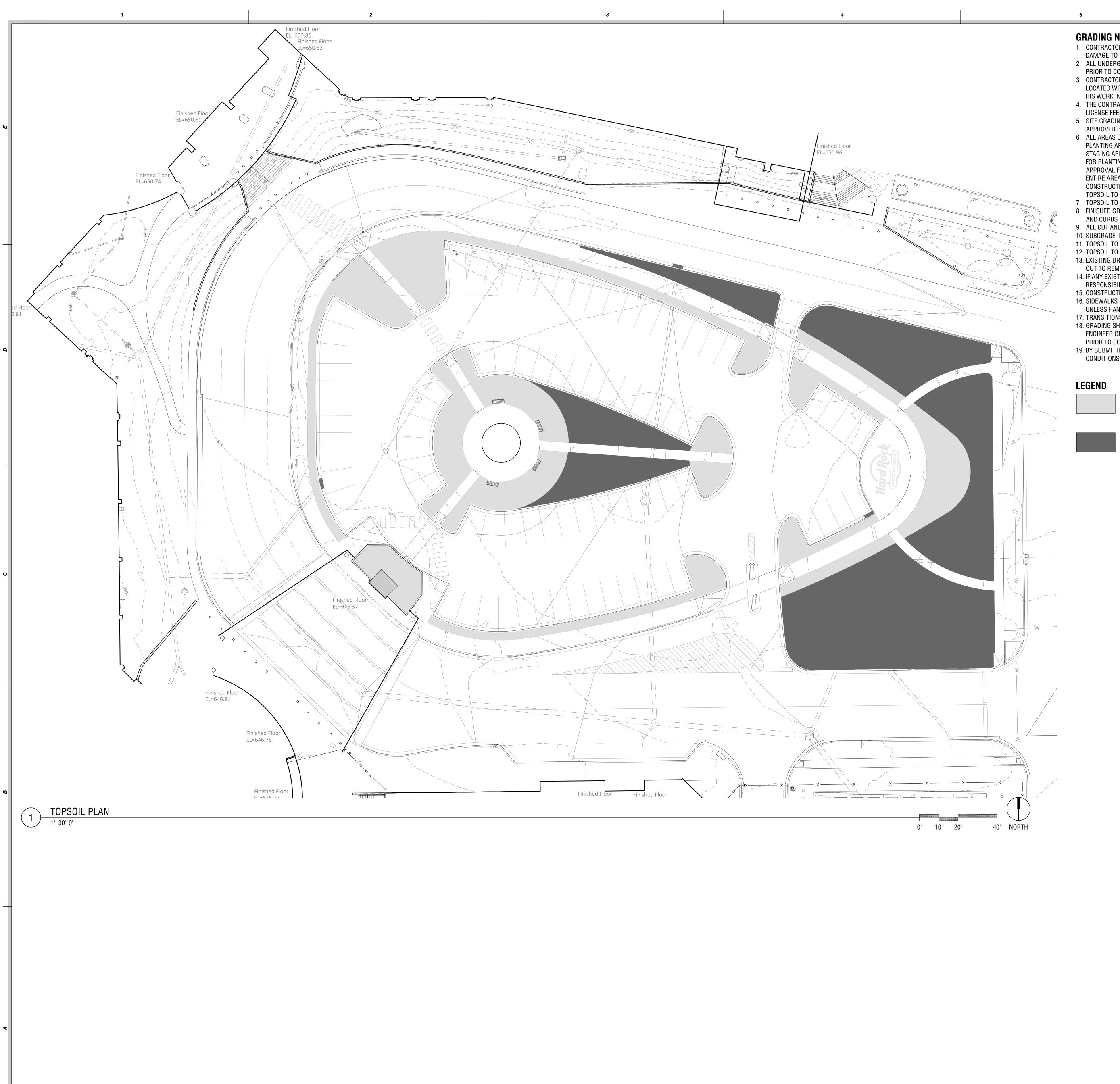












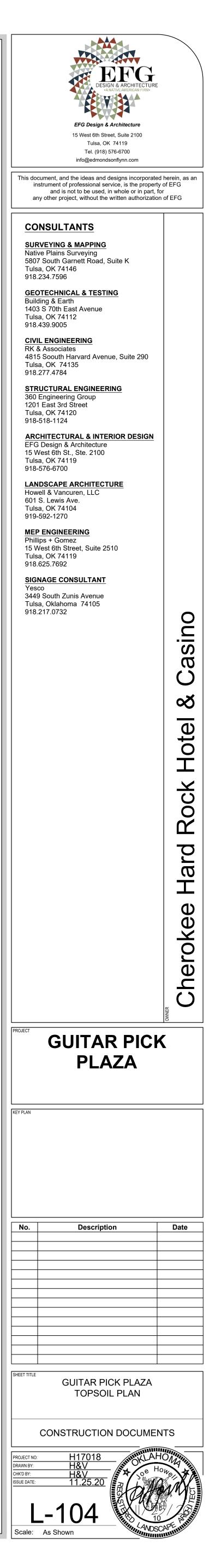
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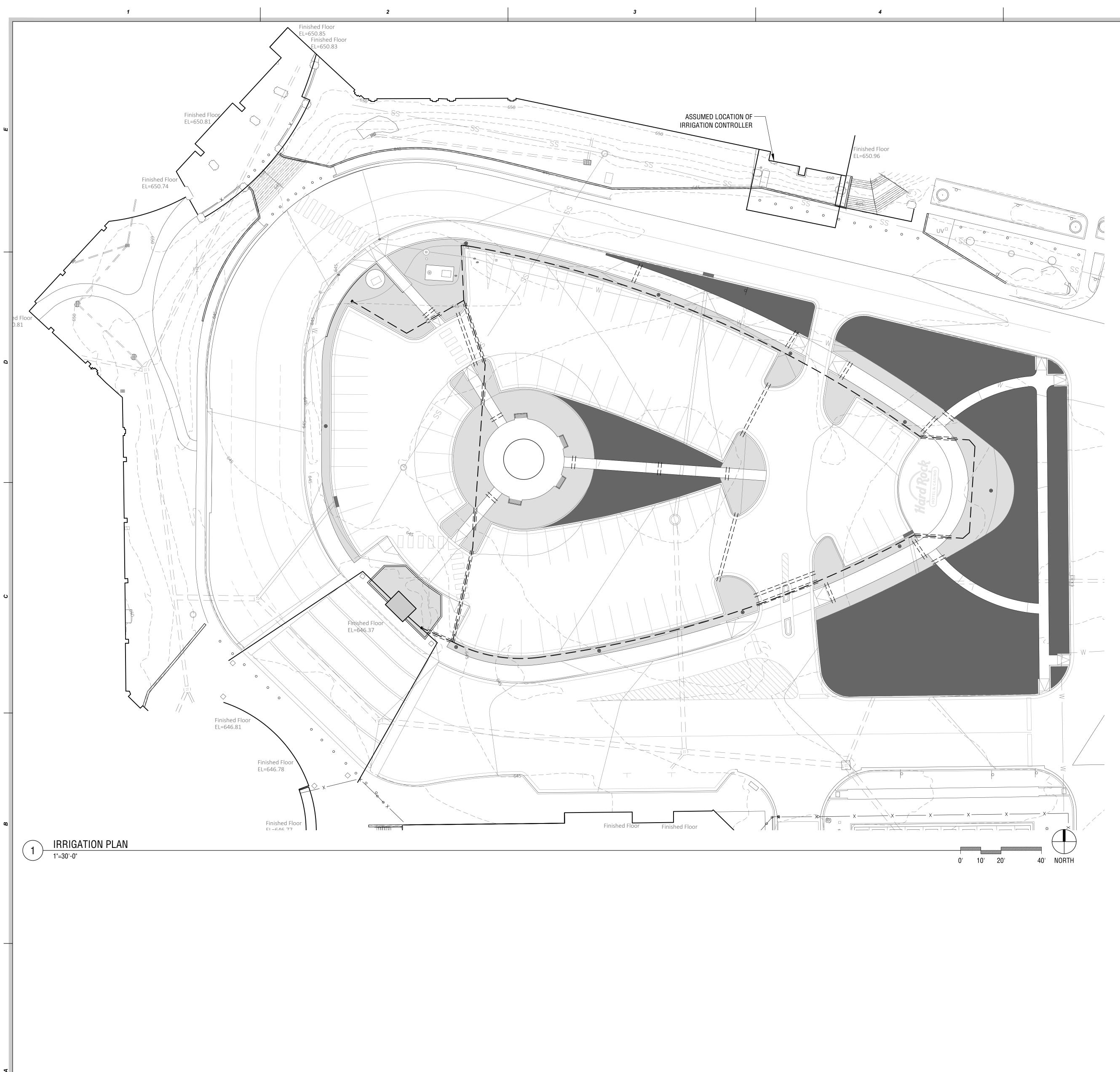
- **GRADING NOTES** 1. CONTRACTOR TO ASCERTAIN LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO EXCAVATION AND BE RESPONSIBLE FOR
- DAMAGE TO UTILITIES RESULTING FROM GRADING OPERATIONS. REPAIRS SHALL BE MADE AT NO COST TO THE OWNER. 2. ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THE SURVEY. CONTACT THE LOCAL UTILITY LOCATION SERVICES PRIOR TO COMMENCING CONSTRUCTION OPERATIONS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ALL STRUCTURES, LANDSCAPING, PAVING AND OTHER ITEMS LOCATED WITHIN AND OUTSIDE WORK AREA. ANY DAMAGE TO PERMANENT ITEMS INCURRED BY THE CONTRACTOR THROUGH HIS WORK IN THIS CONTRACT SHALL BE REPAIRED TO ORIGINAL CONDITION BY THE CONTRACTOR AT HIS OWN EXPENSE.
- 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL GRADING AND EARTH CHANGE PERMITS, PERMIT FEES, LICENSES, LICENSE FEES, SOIL IMPORT AND HAUL-OFF FEES, ETC.
- 5. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED, INSPECTED AND APPROVED BY LOCAL AUTHORITIES.
- 6. ALL AREAS OF THE SITE IDENTIFIED FOR LAWN PLANTING SHALL RECEIVE 6" OF TOPSOIL, AND SHRUB AND GROUND COVER PLANTING AREAS SHALL RECEIVE A MINIMUM OF 12" OF TOPSOIL, UNLESS OTHERWISE NOTED. IN CONSTRUCTION AREAS, STAGING AREAS, AND CONSTRUCTION TRAFFIC AREAS, THE TOPSOIL SHALL NOT BE PLACED UNTIL THE PROJECT IS READY FOR PLANTING. CONTRACTOR SHALL GRADE THE SUBGRADE TO THE REQUIRED ELEVATION TO RECEIVE TOPSOIL AND GAIN APPROVAL FROM THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING. AFTER APPROVAL, ENTIRE AREA TO BE RIPPED OR SCARIFIED TO A MINIMUM DEPTH OF 6", AND ALL STONES, CLODS, ROOTS AND CONSTRUCTION DEBRIS LARGER THAN 2" DIAMETER THAT IS BROUGHT TO THE SURFACE SHALL BE REMOVED. PLACE TOPSOIL TO THE PROFILE INDICATED AND LIGHTLY COMPACT.
- . TOPSOIL TO BE EQUAL TO "PLANTING MIX" AS SUPPLIED BY GEM DIRT. www.gemdirt.com 3. FINISHED GRADE FOR SHRUB, GROUND COVER, AND LAWN AREAS TO BE HELD 1" BELOW THE TOP OF ADJACENT PAVEMENT AND CURBS UNLESS OTHERWISE NOTED.
- 9. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
- 10. SUBGRADE IN AREAS TO RECEIVE TOPSOIL TO BE SCARIFIED 6" DEPTH MINIMUM. 11. TOPSOIL TO BE PLACED IN A RELATIVELY DRY STATE AND DURING DRY WEATHER.
- 12. TOPSOIL TO BE MANUALLY PLACED AROUND TREES, PLANTS, STRUCTURES, ETC. TO PREVENT DAMAGE.
- 13. EXISTING DRAINAGE STRUCTURES TO BE INSPECTED AND REPAIRED AS NEEDED, AND EXISTING PIPES ARE TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS.
- 14. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE THE EXISTING STRUCTURE AS NECESSARY.
- 15. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO THE SAME. 16. SIDEWALKS SHALL NOT EXCEED A MAXIMUM 2% CROSS-SLOPE, AND A MAXIMUM 5% SLOPE IN THE DIRECTION OF TRAVEL UNLESS HANDRAILS ARE PROVIDED EACH SIDE OF WALK PER ADA REQUIREMENTS.
- 17. TRANSITIONS IN GRADE SHALL BE SMOOTH AND UNBROKEN UNLESS OTHERWISE NOTED.
- 18. GRADING SHOULD PROVIDE A MINIMUM 2% IN LAWN AREAS, TOWARD DRAINS OR SWALES. CONTRACTOR TO INFORM ENGINEER OR LANDSCAPE ARCHITECT WHERE SLOPES FALL BELOW THE MINIMUM OR WHERE PONDING IS ANTICIPATED,
- PRIOR TO COMPLETING ESTABLISHMENT OF FINAL GRADE. 19. BY SUBMITTING A BID, THE CONTRACTOR ACKNOWLEDGES HAVING VISITED THE SITE AND BECOME FAMILIAR WITH THE CONDITIONS RELATED TO THE INSTALLATION OF SITE IMPROVEMENTS.

4

12" MINIMUM DEPTH TOPSOIL

6" MINIMUM DEPTH TOPSOIL





2

IRRIGATION NOTES

- 1. LIMITS AND EXTENT OF EXISTING IRRIGATION SYSTEM(S) IS UNKNOWN. CONTRACTOR TO VERIFY AND BE RESPONSIBLE FOR
- POINT OF CONNECTION FOR NEW LOOP EXTENSION TO TIE INTO EXISTING MAINLINE. 2. IF NO ENVIRONMENTAL SENSORS ARE FOUND ON EXISTING SYSTEM, CONTRACTOR TO VERIFY INSTALLATION OF NEW
 - SENSORS WITH OWNER'S REPRESENTATIVE.
- EXISTING TREES TO REMAIN TO BE PROTECTED FROM CONSTRUCTION OPERATIONS.
 PROPOSED MAINLINE WITHIN 4' WIDE LANDSCAPE BED TO HUG THE INSIDE EDGE AS CLOSE AS POSSIBLE TO ALLOW FOR THE ADDITION OF VALVES AS WELL AS NOT TO DISRUPT PERIMETER HEDGE SPACING.
- CONTRACTOR TO ASCERTAIN LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO EXCAVATION AND BE RESPONSIBLE FOR DAMAGE RESULTING FROM IRRIGATION OPERATIONS.
- 6. ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THE SURVEY. CONTACT THE LOCAL UTILITY LOCATION SERVICES PRIOR TO COMMENCING CONSTRUCTION OPERATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF IRRIGATION POINT OF CONNECTION.
 IRRIGATION SYSTEM SHALL BE INSTALLED PER THE CITY OF CATOOSA CODES.
- IRRIGATION SYSTEM SHALL BE INSTALLED PER THE CITY OF CATOUSA CODES.
 ALL LANDSCAPE AREAS SHALL BE IRRIGATED. SHRUB AND GROUND COVER AREAS SHALL BE IRRIGATED ON SEPARATE ZONES FROM LAWN AREAS, AND DRIP ZONES SHALL BE SEPARATE FROM SPRAY/ROTARY ZONES.
- 10. WORK TO INCLUDE DESIGN AND INSTALLATION OF AUTOMATIC, UNDERGROUND IRRIGATION SYSTEM PROVIDING UNIFORM MOISTURE COVERAGE. ALL PIPES AND VALVES SHALL BE TRENCHED BELOW GRADE PER SPECIFICATIONS.
 11. IRRIGATION SYSTEM SHALL CONSIST OF AN ELECTRIC SOLENOID CONTROLLED UNDERGROUND SPRINKLER SYSTEM OF PVC PIPE AND FITTINGS, WITH FIXED AND POP-UP HEADS IN A MULTI-STATION SYSTEM, PROGRAMMED AS APPROVED BY THE
- OWNER'S REPRESENTATIVE. 12. CONTRACTOR TO FOLLOW DESIGN, SPECIFICATIONS, AND SPECIFIC MANUFACTURER'S RECOMMENDATIONS TO INSURE PROPER INSTALLATION OF THE IRRIGATION SYSTEM. CONTRACTOR SHALL NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS INDICATED ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR AREA DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED DURING DESIGN. CONTRACTOR SHALL BRING SUCH OBSTRUCTIONS OR DIFFERENCES TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE. IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, CONTRACTOR ASSUMES RESPONSIBILITY OF ALL REQUIRED REVISIONS.
- 13. THE CONTRACTOR SHALL BE REQUIRED TO INSTALL ALL SLEEVES ON THE PROJECT WHETHER SHOWN ON THE DRAWINGS OR NOT. SLEEVES SHALL BE SIZED TWO (2) TIMES THE NOMINAL DIAMETER OF THE LARGEST PIPE PASSING THROUGH THE SLEEVE. MINIMUM SLEEVE SIZE SHALL BE 2". SLEEVES SHALL BE INSTALLED AT A MINIMUM COVER DEPTH OF EIGHTEEN (18") FROM FINISHED GRADE. COORDINATE HORIZONTAL AND VERTICAL ELEVATIONS WITH UTILITIES AND FOOTINGS. A SEPARATE MINIMUM 2" DIAMETER SLEEVE SHALL BE PROVIDED FOR THE CONTROL WIRES TO PASS THROUGH AT EACH CROSSING. THE CONTRACTOR SHALL RECEIVE THE OWNER REPRESENTATIVE'S APPROVAL FOR ALL REQUIRED BORES UNDER ROADS, PATHS AND SIDEWALKS.
- 14. IF EXISTING IRRIGATION CONTROLLER IS NOT TO BE REUSED. CONTRACTOR TO INSTALL A NEW AUTOMATIC IRRIGATION CONTROLLER AT THE LOCATION APPROVED BY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL RECEIVE THE OWNER REPRESENTATIVE'S APPROVAL FOR SPECIFIC PLACEMENT PRIOR TO INSTALLATION. THE CONTRACTOR SHALL PROVIDE A 2" SCHEDULE 40 PVC CONDUIT FOR IRRIGATION CONTROL WIRES. THE IRRIGATION CONTRACTOR SHALL COORDINATE THE LOCATION OF THE 120 VOLT POWER SOURCE AND VERIFY ITS INSTALLATION PRIOR TO COMMENCING IRRIGATION WORK.
- 15. ADJUST ALL HEADS TO MINIMIZE OVER SPRAY ONTO HARDSCAPE AND BUILDINGS. USE PCS SCREENS AS NEEDED ON SPRAY HEADS WITH 5'-15' SERIES MPR SPRAY NOZZLES TO ADJUST OVER SPRAY. USE RADIUS ADJUSTMENT SCREW ON 5'-15' SERIES MPR SPRAY NOZZLES ONLY WHEN NECESSARY.
- 16. ALL SPRAY AND ROTARY HEADS SHALL BE INSTALLED PERPENDICULAR (90 DEGREES) TO FINISHED GRADE.
 17. SPRAY SPRINKLER HEADS WITH CHECK VALVES SHALL BE REQUIRED TO PREVENT LOW HEAD DRAINAGE. CONTRACTOR SHALL INSTALL ADDITIONAL IN-LINE CHECK VALVES AS REQUIRED WHEN HEAD OF WATER IN UPSTREAM PIPE EXCEEDS THE
- CAPACITY OF DOWNSTREAM SPRINKLER HEAD CHECK VALVES AS REQUIRED WHEN HEAD OF WATER IN OPSTREAM PIPE EXCEEDS THE CAPACITY OF DOWNSTREAM SPRINKLER HEAD CHECK VALVES. 18. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE. WHERE PRACTICAL, IRRIGATION PIPING WILL ENTER THE DRIPLINE OF TREES DIRECTLY TOWARD
- THE TRUNKS AS POSSIBLE. WHERE PRACTICAL, IRRIGATION PIPING WILL ENTER THE DRIPLINE OF TREES DIRECTLY TOWA THE TREE TRUNK AND NOT PASS COMPLETELY THROUGH THE ROOTZONE. 19. CONTRACTOR SHALL PROVIDE "AS BUILT" DRAWINGS TO THE OWNER'S REPRESENTATIVE UPON COMPLETION OF THE INSTALLATION.
- 20. BY SUBMITTING A BID, THE CONTRACTOR ACKNOWLEDGES HAVING VISITED THE SITE AND BECOME FAMILIAR WITH THE CONDITIONS RELATED TO THE INSTALLATION OF SITE IMPROVEMENTS.

LEGEND

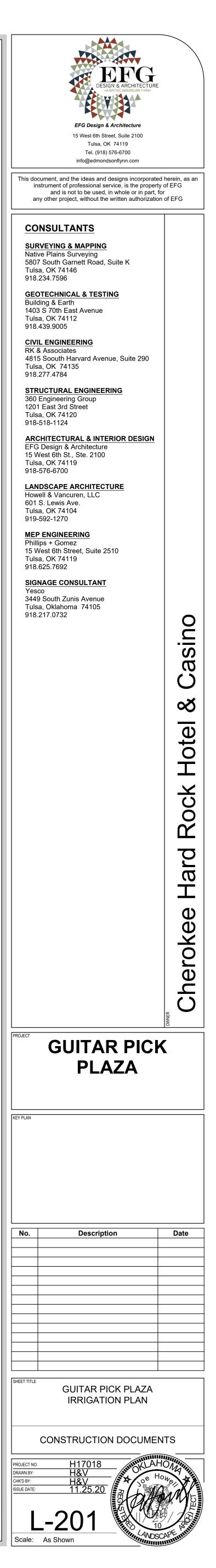
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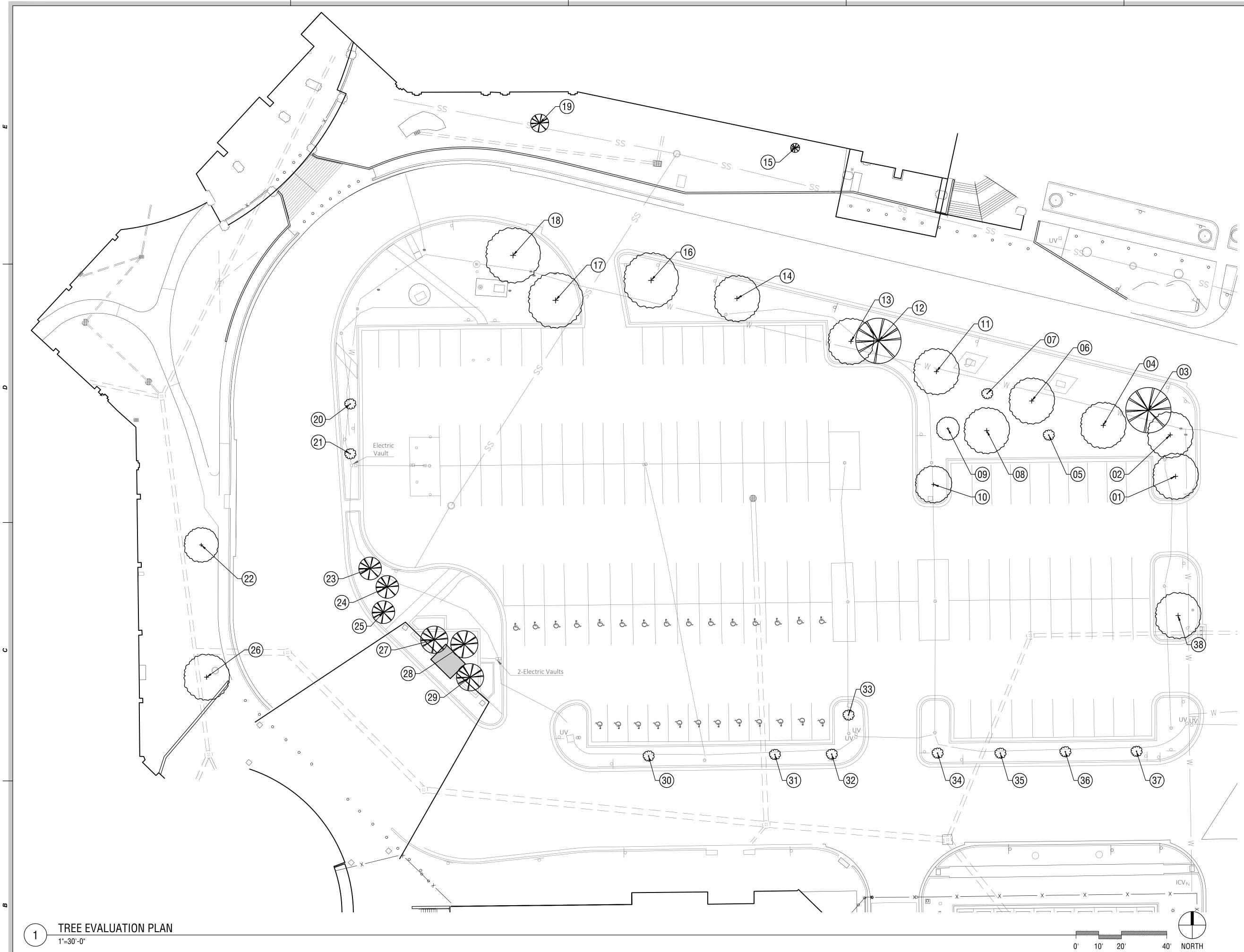
SHRUB SPRAY IRRIGATION AREA

TURF ROTOR/SPRAY IRRIGATION AREA

2" DIA. SCH. 40 PVC IRRIGATION MAINLINE LOOP WITH SCH. 40 SOLVENT-WELD PVC FITTINGS. EXACT ROUTE TO BE COORDINATED WITH OTHER SITE WORK.

====== PVC SLEEVES





3

4

4

2

2

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TREE EVALUATION NOTES

5

5

1. CONTRACTOR TO ASCERTAIN LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO EXCAVATION AND BE RESPONSIBLE FOR

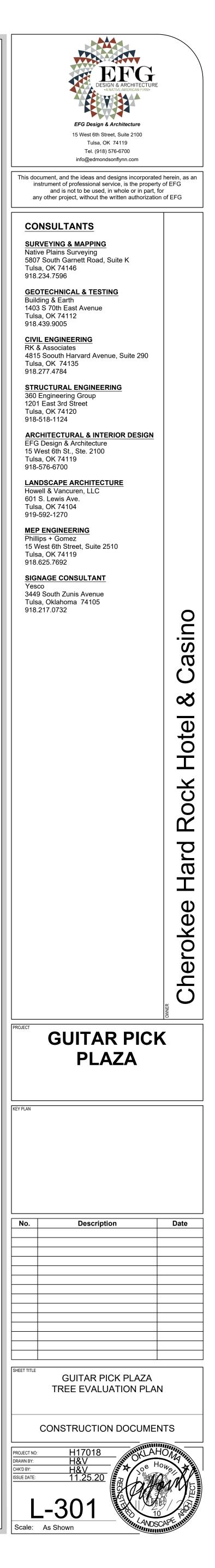
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- DAMAGE RESULTING FROM PLANTING OPERATIONS. REPAIRS SHALL BE MADE AT NO COST TO THE OWNER. 2. ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THE SURVEY. CONTACT THE LOCAL UTILITY LOCATION SERVICES PRIOR TO COMMENCING CONSTRUCTION OPERATIONS.
 - 3. CONTRACTOR TO FIELD VERIFY DEPTH OF UTILITIES AND COORDINATE WITH THE OWNER'S REPRESENTATIVE WHICH TREES ARE A HIGHER RISK OF UTILITY DAMAGE.
 - 4. TREE RELOCATION TO OCCUR IMMEDIATELY AFTER TREE EXCAVATION.
 - CONTRACTOR TO COORDINATE NEW LOCATIONS FOR TREES TO BE RELOCATED WITH OWNER'S REPRESENTATIVE AND STAKE PROPOSED LOCATIONS FOR APPROVAL PRIOR TO COMMENCING TREE EXCAVATION.
 - 6. IN ORDER TO CAPTURE THE MAJORITY OF THE TREE'S ROOT SYSTEM, HOWELL & VANCUREN RECOMMENDS A MINIMUM 60" SPADE FOR TREES 4-1/2" CALIPER OR SMALLER AND A MINIMUM 90" SPADE FOR TREES 5" TO 9" CALIPER.
 - 7. RELOCATED TREES SHALL BE THOROUGHLY WATERED AND FERTILIZED IMMEDIATELY AFTER INSTALLATION PER NEW TREE SPECIFICATIONS ON SHEET L-001.
 8. REOKEN REANCHES TO BE DEODEDLY DEMOVED ACCORDING TO HOLD SERVICE ACCORDINATION ACCORDINATIONATION ACCORDINATION ACCORDINATION ACCORDINATIONATIONACCORDINATIONATION ACCORDINATION ACCORDINATIONATION ACCORDINAT
 - BROKEN BRANCHES TO BE PROPERLY REMOVED ACCORDING TO US NURSERYMAN STANDARDS.
 BY SUBMITTING A BID. THE CONTRACTOR ACKNOWLEDGES HAVING VISITED THE SITE AND BECOM
 - 9. BY SUBMITTING A BID, THE CONTRACTOR ACKNOWLEDGES HAVING VISITED THE SITE AND BECOME FAMILIAR WITH THE CONDITIONS RELATED TO THE INSTALLATION OF SITE IMPROVEMENTS.

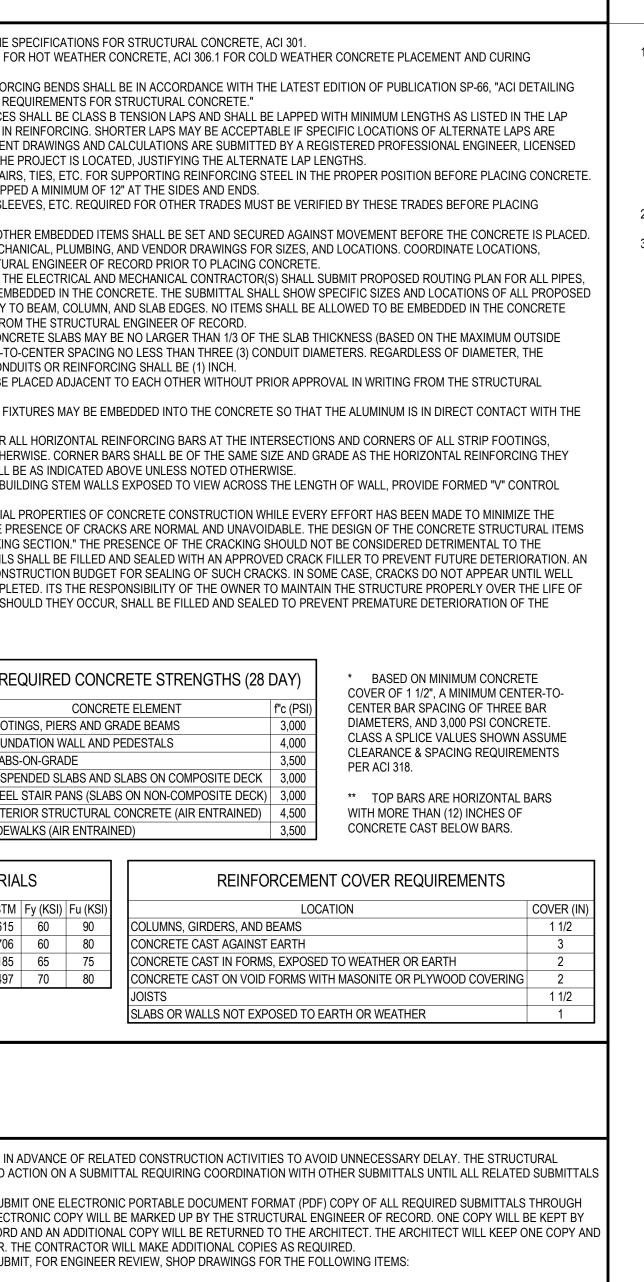
TREE EVALUATION KEY NOTES

			POTENTIAL
KEY	NAME	SIZE	FOR RELOCATION
۱.	RED OAK	5.5"	GOOD
2.	REDBUD	6"	GOOD
3.	LOBLOLLY	8"	GOOD
4.	RED OAK	6"	GOOD
5.	CRAPE MYRTLE	2"	GOOD
5.	RED OAK	6"	GOOD
7.	CRAPE MYRTLE	2"	GOOD
3.	RED OAK	5"	GOOD
9.	CRAPE MYRTLE	2"	GOOD
10.	RED OAK	5"	GOOD
11.	CHINESE PISTACHE	6.5"	GOOD
12.	LOBLOLLY PINE	5"	GOOD
13.	CHINESE PISTACHE	7"	GOOD
14.	GINKO	6"	GOOD
15.	BLUE ATLAS CEDAR	3.5"	GOOD
16.	CHINESE PISTACHE	8"	GOOD
17.	RIVER BIRCH	3"	FAIR (CONSIDER REMOVING SMALLEST TRUNK)
18.	RIVER BIRCH	3.5"	GOOD
19.	RIVER BIRCH	1.5"	GOOD
20.	CRAPE MYRTLE	2.5"	GOOD
21.	CRAPE MYRTLE	2.5"	GOOD
22.	RIVER BIRCH	4"	GOOD
23.	BLUE ATLAS CEDAR	2"	GOOD
24.	BLUE ATLAS CEDAR	2"	GOOD
25.	BLUE ATLAS CEDAR	2"	GOOD
26.	RIVER BIRCH	5"	POOR (RECOMMEND TREE REMOVAL)
27.	BLUE ATLAS CEDAR		N/A (TREE TO REMAIN)
28.	BLUE ATLAS CEDAR	7"	N/A (TREE TO REMAIN)
29.	BLUE ATLAS CEDAR	4.5"	N/A (TREE TO REMAIN)
30.	CRAPE MYRTLE	2"	GOOD
31.	CRAPE MYRTLE	2"	GOOD
32.	CRAPE MYRTLE	2"	POOR (RECOMMEND TREE REMOVAL)
33.	CRAPE MYRTLE	2"	GOOD
34.	CRAPE MYRTLE	2"	GOOD
35.	CRAPE MYRTLE	2"	GOOD
36.	CRAPE MYRTLE	2"	GOOD
37.	CRAPE MYRTLE	2"	GOOD
38.	LACEBARK ELM	6"	GOOD



	DESIGN PARAMETERS	DIVISION 3 - CONCRETE
SCHEREL S	2 SNOW LOADS: A GROUND SNOW LOAD, Pg 10 PSF 3. MIND LOADS: A BASIC WIND SPEED (3 SECOND GUST) 115 MPH B. RISK CATEGORY 4. BASIC WIND SPEED (3 SECOND GUST) 11 SMPH B. RISK CATEGORY 5. MUND LOADS: A BASIC WIND SPEED (3 SECOND GUST) 10 PSF 6. D. INTERNAL PRESSURE COFFICIENT 10 18 E BASIC WIND PRESSURE COFFICIENT 7. DESIGN WIND PRESSURE ON EXTENSION WALLS (C& LOAD BASED ON 100 FT AREA) 19.7 PSF 7. DESIGN WIND PRESSURE ON ROOFS (C&C LOAD BASED ON 100 FT AREA) 12.1 PSF 7. EDGE ZONES, (a=10-0") 17.2 PSF 7. EDGE ZONES, (a=10-0") 17.2 PSF 8. DESIGN WILLT PRESSURE ON ROOFS (C&C LOAD BASED ON 100 FT* AREA) 13.3 PSF 8. SPECTRAL RESPONSE ACCELERATION; (SHORT PERIOD), Ss 133 9. INTERIOR ZONES 0.131 8. SPECTRAL RESPONSE ACCELERATION; (SHORT PERIOD), Sd 0.139 0. SPECTRAL RESPONSE ACCELERATION; (SHORT PERIOD), Sd 0.139 0. SPECTRAL RESPONSE ACCELERATION; (SHORT PERIOD), Sd 0 18. SPECTRAL RESPONSE ACCELERATION; (SHORT PERIOD), Sd 0.139 0. SPECTRAL RESPONSE ACCELERATION; (SHORT PER	 CONTRACTOR SHALL FOLLOW ACI 305.1 FOR HOT WEATH GUIDELINES. ARRANGEMENTS AND DETAIL OF REINFORCING BENDS S MANUAL" AND ACI 318, "BUILDING CODE REQUIREMENTS UNLESS NOTED OTHERWISE, BAR SPLICES SHALL BE CL LENGTH SCHEDULE, WHERE REQUIRED IN REINFORCING SHOWN ON THE REINFORCING PLACEMENT DRAWINGS A TO PRACTICE IN THE STATE IN WHICH THE PROJECT IS L PROVIDE SUITABLE WIRE SPACERS, CHAIRS, TIES, ETC. ALL WELDED WIRE FABRIC SHALL BE LAPPED A MINIMUW LOCATIONS AND SIZES OF OPENINGS, SLEEVES, ETC. RE CONCRETE. ALL SLOTS, SLEEVES, TRENCHES AND OTHER EMBEDDE SEE ARCHITECTURAL, ELECTRICAL, MECHANICAL, PLUM SPACING, AND SIZES WITH THE STRUCTURAL ENGINEER AS PART OF THE SUBMITTAL PROCESS, THE ELECTRICAL CONDUITS, OR OTHER DEVICES TO BE EMBEDDED IN TH EMBED ITEMS REFERENCING PROXIMITY TO BEAM, COLL WITHOUT PRIOR WRITTEN APPROVAL FROM THE STRUC 10. CONDUITS AND PIPES EMBEDDED IN CONCRETE SLABS I DIAMETER) AND SHALL HAVE A CENTER-TO-CENTER SPA MINIMUM CLEAR SPACING BETWEEN CONDUITS OR REIN 11. NO MORE THAN FOUR CONDUITS MAY BE PLACED ADJAC ENGINEER OF RECORD. NO ALUMINUM CONDUITS, DEVICES, OR FIXTURES MAY BE CONRECT. CORNER BARS SHALL BE PROVIDED FOR ALL HORIZONT. BEAMS, AND WALLS UNLESS NOTED OTHERWISE. CORNE CONNECT. CORNER BARS SHALL BE PROVIDED FOR ALL HORIZONT. BEAMS, AND WALLS UNLESS NOTED OTHERWISE. CORNE CONNECT. CORNER BARS SHALL BE PROVIDED FOR ALL HORIZONT. BEAMS, AND WALLS UNLESS NOTED OTHERWISE. CORNE CONNECT. MINIMUM LAP LENGTHS SHALL BE AS INDICAT FOR EXTERIOR RETAINING WALLS AND BUILDING STEM V JOINTS AT 15'-0" OC MAX. CRACKING IS INHERENT TO THE MATERIAL PROPERTIES EFFECTS IF UNSIGHTLY CRACKING, THE PRESENCE OF O HAVE BEEN ANALYZED USING A "CRACKING SECTION." T STRUCTURE. CRACK LARGER THAN 5 MILS SHALL BE FILL ALLOWANCE SHALL BE MADE IN THE CONSTRUCTION BU AFTER CONSTRUCTION HAS BEEN COMPLETED. ITS THE THE STRUCTURE. CONCRETE CRACKS, SHOULD THEY
	GENERAL	BAR SIZE TOP BARS** OTHER CO #3 1'-11" 1'-6" FOOTINGS, PIERS A #4 2'-6" 1'-11" FOUNDATION WALL #5 3'-1" 2'-5" SLABS-ON-GRADE #6 3'-8" 2'-10" SUSPENDED SLABS #7 5'-3" 4'-0" STEEL STAIR PANS #8 6'-0" 4'-7" EXTERIOR STRUCTURE
 PHONE STATUS CONFERENCE ON A EVEN DESIGNATION AND AND THE CONFERENCE ON A EVEN DE CONFERENCE ON A EVENT DE CONFERENCE ON A EVEN DE CONFERENCE ON A EVENT DE CONFERENCE ON A EVENT DE CONFERENCE ON A EVEN DE CONFERENCE ON A EVENT DE CON	 MECHANICAL, ELECTRICAL, AND DRAWINGS FROM OTHER DISCIPLINES. THE CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS INTO THE SHOP DRAWINGS AND FIELD WORK. WHERE CONFLICT EXISTS AMONG VARIOUS PARTS OF THE STRUCTURAL CONTRACT DOCUMENTS, STRUCTURAL DRAWINGS, GENERAL NOTES, AND SPECIFICATIONS, THE STRICTEST REQUIREMENTS, AS INDICATED BY THE ENGINEER, SHALL GOVERN. WHERE MEMBER LOCATIONS ARE NOT SPECIFICALLY DIMENSIONED, THE FOLLOWING RULES SHALL APPLY: A. DO NOT SCALE DRAWINGS. B. COLUMNS ARE CENTERED ON GRID LINES. C. FOOTINGS ARE CENTERED BENEATH COLUMNS. D. CONTINUOUS FOOTINGS ARE CENTERED BENEATH WALLS. E. FRAMING MEMBERS ARE EITHER LOCATED ON GRID LINES OR ARE EQUALLY SPACED BETWEEN LOCATED MEMBERS. 4. ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE STRUCTURAL ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL 	REINFORCEMENT MATERIALS REINFORCING ELEMENT ASTM Fy (KSI) Fu (TYP REINFORCEMENT A615 60 S WELDED AND BENT REINF A706 60 8 WELDED WIRE REINFORCING, SMOOTH A185 65 7
CONTRACTOR DIVISION 2 - FOUNDATIONS RECOMMENDATIONS CONTAINED IN "REPORT OF SUBSURFACE EXPLORATION AND GEOTECHNICAL EVALUATION", PROJECT NUMBER 0K20253 BY BUILDING AND EARTH SCIENCES, INC., DATED NOVEMBER 11, 220 WERE USED FOR DESIGN, REFER TO DESIGN PARAMETERS FOR SOIL DESIGN CRITERIA BASED ON THESE RECOMMENDATIONS. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE GEOTECHNICAL REPORT AND SHEEP SLOPE BEST MANAGEMENT PRACTICES. THE GEOTECHNICAL ENGINEER SHALL BE RESPONSIBLE FOR REVIEWING THE GEOTECHNICAL REPORT AND SHELP SLOPE BEST MANAGEMENT PRACTICES. THE GEOTECHNICAL ENGINEER SHALL BE RESPONSIBLE FOR REVIEWING THE GEOTECHNICAL REPORT AND SHELP SLOPE BEST MANAGEMENT PRACTICES. THE GEOTECHNICAL ENGINEER SHALL BE RESPONSIBLE FOR REVIEWING THE GEOTECHNICAL REPORT AND SHELP SLOPE BEST MANAGEMENT PRACTICES. THE GEOTECHNICAL ENGINEER SHALL BE RESENT DURING PROOF ROLLING AND SHALL INSPECT THE SUBGRADE PRIOR TO ANY FILL OPERATIONS. ALL COMPACTOR FILL SHALL BE CONTINUOUSLY INSPECTED BY THE OWNERS SELECTED INDEPENDENT TISTING LABORATOR. FOOTINGS SHALL BEAR EITHER ON COMPETENT NATIVE SOIL OR COMPACTED STRUCTURAL FILL AS PER THE GEOTECHNICAL REPORT. EXTERIOR AND EXTERIOR PERIMERER FOR CONS SHALL BEAR NOT LESS THAN JURES SHOW IS OF QUESTIONABLE BEARING VALUE, THE STRUCTURAL ENGINEER OR FOR CONS OF ALCHORES STALE CENT MICH BEDID MEEPENDENT ESTING LABORATOR. ALL COMPACTOR FILL SHALL BE CONFLOX THE SOIL AT THE BEARING SHOW IS OF QUESTIONABLE BEARING VALUE, THE STRUCTURAL ENGINEER OR TERPORT ON CAMPLY WITH REQUIREMENTS STATED IN THE GEOTECHNICAL REPORT. LIVE ALL FLUE THE FLOW DOOR OR ARCHITER STATED IN THE SOLE STATE DIN THE GEOTECHNICAL REPORT. UNO. REPORDER ON RECORD OR ARCHITER STATELE ON THE DESCONCEADE DE MILESS ONED DO R DETAILED OTHERWISE. SUBBASE SHALL MEET GRADATION REQUIREMENTS STATED IN THE SOTECHNICAL REPORT. UNO. REPORDER AND READ OR RELAR FREE-DRIVING GRANULA TREVERS SHOW IS OF QUESTIONABLE BEARING VALUE, THE STRUCTURE SHALL BEAN FREEDRED AND THE DIMEDESIGNED FOR CONSTRUCTION COMPACEMENTS ON THE	 THE STRUCTURE HAS BEEN DESIGNED FOR THE LOADS IDENTIFIED WITHIN THESE STRUCTURAL DRAWINGS THAT ARE ANTICIPATED TO BE APPLIED TO THE FINAL STRUCTURE ONCE COMPLETED AND OCCUPIED. THE CONTRACTOR SHALL NOT OVERLOAD THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING THE ADEQUACY OF THE STRUCTURE TO SUPPORT ANY APPLIED CONSTRUCTION LOADS, INCLUIDING THOSE DUE TO CONSTRUCTION VIELES OR EQUIPMENT, MATERIAL HANDLING OR STORAGE, SHORING AND RESHORING, OR ANY OTHER PROPOSED CONSTRUCTION LOADS THAT ARE IN EXCESS OF THE STATED DESIGN LOADS. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE TO DESIGN OR CHECK THE STRUCTURE FOR LOADS APPLIED TO THE STRUCTURE FOR ANY CONSTRUCTION ACTIVITY. WEIGHTS OF MECHANICAL EQUIPMENT SHOWN ON THE STRUCTURAL PLANS ARE FOR UNITS SPECIFIED BY THE MECHANICAL ENGINEER. CONTRACTOR SHALL VERIFY THE WEIGHTS. ANY SUBSTITUTIONS THAT RESULT IN INCREASED WEIGHT SHALL BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. THE SIZE AND LOCATION OF EQUIPMENT PADS AND PENETRATIONS THROUGH THE STRUCTURE FOR MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHALL BE VERIFIED BY THE CONTRACTOR. OPENINGS AND PENETRATIONS NOT SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER OF RECORD. PRIOR TO FABRICATION AND/OR ERECTION OF ANY MATERIALS, THE CONTRACTOR SHALL FIELD VERIFY ALL PERTINENT EXISTING DIMENSIONS, ELEVATIONS, AND CONDITIONS AND SHALL REPORT ANY DISCREPANCIES TO THE STRUCTURAL ENGINEER OF RECORD OR THE ARCHITECT IMMEDIATELY UPON DISCOVERY. BACKFILL BOTH SIDES OF ALL FOUNDATION AND RETAINING WALLS EQUIALLY UNTIL LOW SIDE IS UP TO FINISH GRADE. DO NOT BACKFILL ANY WALLS UNTIL CONCRETE HAS REACHED ITS SPECIFIED 28-DAY COMPRESSIVE STRENGTH. CONNECTIONS OF SYSTEMS DESIGNED BY THE CONTRACTOR'S ENGINEER SUCH AS, BUT NOT LIMIED TO, CLADDING, STAILES, ELEVATORS AND MEP LOADS ARE ASSUMED TO IMPOSE VERTICAL ANDROR HALL LOADS ON THE BASE BUILDING STRUCTURAL MEMBERS WITHOUT	 TRANSMIT SUBMITTALS SUFFICIENTLY IN ADVANCE OF ENGINEER OF RECORD MAY WITHHOLD ACTION ON A S ARE RECEIVED. THE GENERAL CONTRACTOR SHALL SUBMIT ONE ELEC THE ARCHITECT FOR REVIEW. THE ELECTRONIC COPY THE STRUCTURAL ENGINEER OF RECORD AND AN ADD RETURN A COPY TO THE CONTRACTOR. THE CONTRAC THE GENERAL CONTRACTOR SHALL SUBMIT, FOR ENGI A. CONCRETE MIX DESIGNS (3) CONSTRUCTION JOINT LOCATIONS IN STRUCTURA C. REINFORCING STEEL <u>NOTES:</u> SHALL BE SEALED BY A REGISTERED PROSPECIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER SHALL BE SUBMITTED TO THE ENGINEER ITEM IS A DEFERRED SUBMITTAL WHICH I PRIOR TO INSTALLATION. THE MANUFACT ENGINEER OF RECORD FOR REVIEW.
 BUILDING AND EARTH SCIENCES, INC., DATED NOVEMBER 11, 2020 WERE USED FOR DESIGN. REFER TO DESIGN PARAMETERS FOR SOIL DESIGN CRITERIA BASED ON THESE RECOMMENDATIONS. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE GEOTECHNICAL REPORT AND SHALL FOLLOW THE RECOMMENDATIONS SPECIFIED THEREIN, INCLUDING, BUT NOT LIMITED TO, SUBGRADE PREPARATIONS, GROUND WATER MANAGEMENT AND STEEP SLOPE BEST MANAGEMENT PRACTICES. THE GEOTECHNICAL ENGINEER SHALL BE PRESENT DURING PROOF ROLLING AND SHALL INSPECT THE SUBGRADE PRIOR TO ANY FILL OPERATIONS. ALL COMPACTED FILL SHALL BE CONTINUOUSLY INSPECTED BY THE OWNER'S SELECTED INDEPENDENT TESTING LABORATORY. FOOTINGS SHALL BEAR EITHER ON COMPETENT NATIVE SOIL OR COMPACTED STRUCTURAL, FILL AS PER THE GEOTECHNICAL REPORT. EXTERIOR AND EXTERIOR PERIMETER FOOTINGS SHALL BEAR NOT LESS THAN 24 INCHES BELOW FINISH GRADE UNLESS OTHERWISE SPECIFIED BY THE GEOTECHNICAL ENGINEER AND/OR BUILDING OFFICIAL. IF THE SOIL AT THE BEARING ELEVATIONS SHOWN IS OF QUESTIONABLE BEARING VALUE, THE STRUCTURAL ENGINEER FOO RARCHTET SHALL BE NOTIFIED IMMEDIATELY. ALL FILL MATERIAL UNDER THE STRUCTURE SHALL COMPLY WITH REQUIREMENTS STATED IN THE GEOTECHNICAL REPORT, UNO. PROVIDE A MINIMUM OF A 4-INCH CLEAN, REET GRADATION REQUIREMENTS OF ASSINCE OF, OR, UNLESS NOTED OR DETAILED OTHERWISE. SUBBAS SHALL MEET GRADATION REQUIREMENTS OF ASSINCE ONST, UNLESS SNOTED OR DETAILED OTHERWISE. SUBBAS SHALL MEET GRADATION REQUIREMENTS IN THE SPECIFICATIONS, SHALL BE PLACED BELOW ALL INTERIOR SLABS- ON-GRADE PER THE FOUNDATION PLAN NOTES. THE CONTRACTOR IS CAUTIONED AGAINST LOADING SLAB-ON-GRADE WITH CONSTRUCTION EQUIPMENT. THE SLAB HAS NOT BEEN DESIGNED FOR CONSTRUCTIONED LOADINS LOADING SLAB-ON-GRADE WITH CONSTRUCTION EQUIPMENT. THE SLAB HAS NOT BEEN DESIGNED FOR CONSTRUCTIONED LOADINS IN LOADING SLAB-ON-GRADE WITH CONSTRUCTION SUBMIT CALCULATIONS SIGNED AND SRALED BY A REGISTERED STRUCTURAL, CIVIL, OWNED TERIEN, IN THE STATE WHERE THE PROJECT IS LO	CONTRACTOR.	
	 BUILDING AND EARTH SCIENCES, INC., DATED NOVEMBER 11, 2020 WERE USED FOR DESIGN. REFER TO DESIGN PARAMETERS FOR SOIL DESIGN CRITERIA BASED ON THESE RECOMMENDATIONS. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE GEOTECHNICAL REPORT AND SHALL FOLLOW THE RECOMMENDATIONS SPECIFIED THEREIN, INCLUDING, BUT NOT LIMITED TO, SUBGRADE PREPARATIONS, GROUND WATER MANAGEMENT AND STEEP SLOPE BEST MANAGEMENT PRACTICES. THE GEOTECHNICAL ENGINEER SHALL BE PRESENT DURING PROOF ROLLING AND SHALL INSPECT THE SUBGRADE PRIOR TO ANY FILL OPERATIONS. ALL COMPACTED FILL SHALL BE CONTINUOUSLY INSPECTED BY THE OWNER'S SELECTED INDEPENDENT TESTING LABORATORY. FOOTINGS SHALL BEAR EITHER ON COMPETENT NATIVE SOIL OR COMPACTED STRUCTURAL FILL AS PER THE GEOTECHNICAL REPORT. EXTERIOR AND EXTERIOR PERIMETER FOOTINGS SHALL BEAR NOT LESS THAN 24 INCHES BELOW FINISH GRADE UNLESS OTHERWISE SPECIFIED BY THE GEOTECHNICAL ENGINEER AND/OR BUILDING OFFICIAL. IF THE SOIL AT THE BEARING ELEVATIONS SHOWN IS OF QUESTIONABLE BEARING VALUE, THE STRUCTURAL ENGINEER OF RECORD OR ARCHITECT SHALL BE NOTIFIED IMMEDIATELY. ALL FILL MATERIAL UNDER THE STRUCTURE SHALL COMPLY WITH REQUIREMENTS STATED IN THE GEOTECHNICAL REPORT, UNO. PROVIDE A MINIMUM OF A 4-INCH CLEAN, FREE-DRAINING GRANULAR SUBBASE FILL BELOW ALL INTERIOR SLABS-ON-GRADE UNLESS NOTED OR DETAILED OTHERWISE. SUBBASE SHALL MEET GRADATION REQUIREMENTS IN THE SPECIFICATIONS, SHALL BE PLACED BELOW ALL INTERIOR SLABS-ON-GRADE UNLESS NOTED OR DETAILED OTHERWISE. SUBBASE SHALL MEET GRADATION REQUIREMENTS IN THE SPECIFICATIONS, SHALL BE PLACED BELOW ALL INTERIOR SLABS-ON-GRADE UNLESS NOTED OR DETAILED OTHERWISE. SUBBASE SHALL MEET GRADATION REQUIREMENTS IN THE SPECIFICATIONS, SHALL BE PLACED BELOW ALL INTERIOR SLABS-ON-GRADE UNLESS NOTED OR DETAILED OTHERWISE. A POLYETHYLENE FILM VAPOR RETARDER, MEETING THE REQUIREMENTS IN THE SPECIFICATIONS, SHALL BE PLACED BELOW ALL INTERIOR SLABS-ON-GRADE PER THE FOUNDATION PLAN NOTES. TH	PEDESTAL BY OTHERS

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STRUCTURAL FLOORS, WALLS AND SLABS-ON-GRADE. STERED PROFESSIONAL ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED PER THE PROJECT

ENGINEER FOR RECORD ONLY AND WILL NOT RECEIVE THE ENGINEER'S SHOP DRAWING STAMP ENGINEER AND THE OWNER'S TESTING AGENCY FOR REVIEW AL WHICH HAS NOT BEEN COMPLETE AND IS TO BE SUBMITTED TO THE BUILDING OFFICIAL AND APPROVED MANUFACTURER, CONSULTANT, OR CONTRACTOR, AS APPROPRIATE SHALL PROVIDE SUBMITTALS TO THE REVIEW.

AND ELECTRONICALLY STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL.

SPECIAL INSPECTIONS

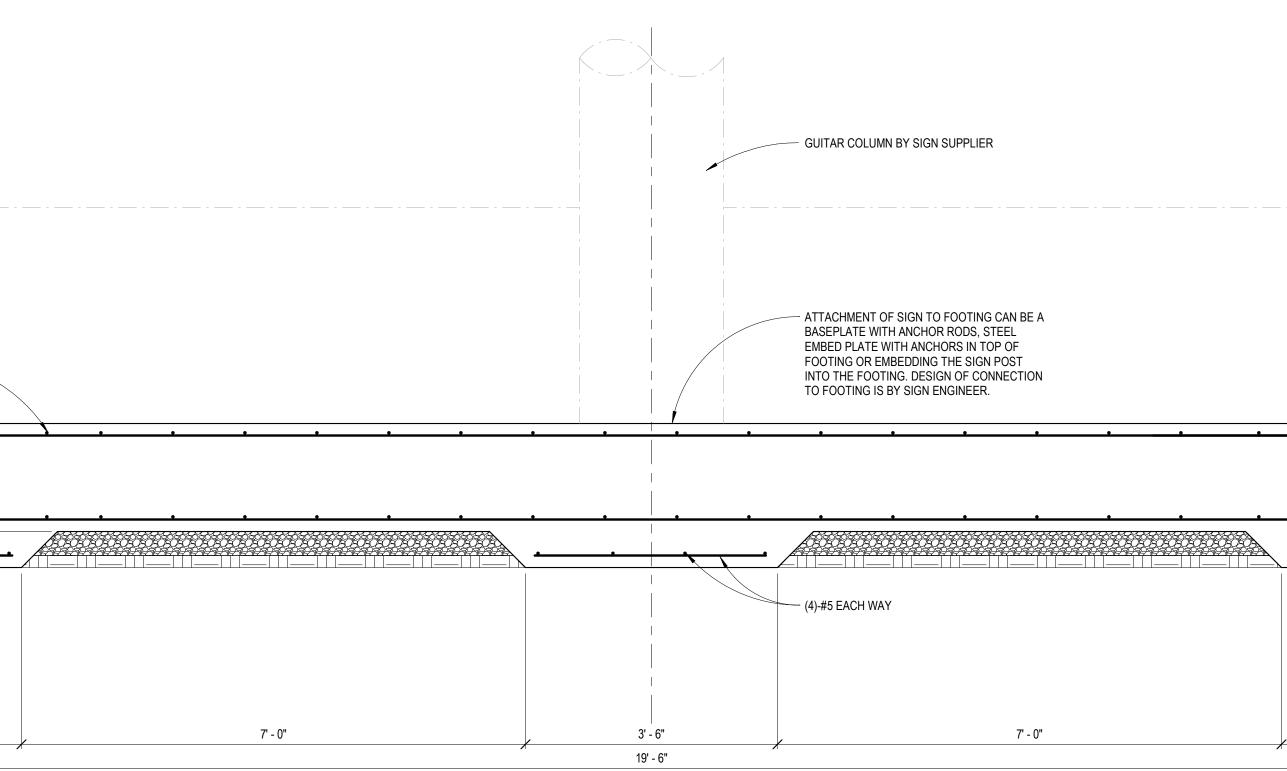
SPECIAL INSPECTION SHALL BE PROVIDED BY THE OWNER ACCORDING TO SECTION 1705 OF IBC 2015. THE APPROVED SPECIAL INSPECTOR SHALL DEMONSTRATE COMPETENCE FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION. THE SPECIAL INSPECTOR SHALL SEND REPORTS TO THE OWNER, THE BUILDING OFFICIAL, THE ARCHITECT, THE STRUCTURAL ENGINEER OF RECORD, AND TO THE CONTRACTOR. THE SPECIAL INSPECTOR SHALL BRING NON-CONFORMING ITEMS TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR AND NOTE ALL SUCH ITEMS IN THE REPORTS. ANY UNRESOLVED ITEM ABOUT THE COVERED WORK SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S CONSTRUCTION MANAGER AS WELL AS THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER OR NOT THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE SPECIAL INSPECTION AGENCY REGARDING INDIVIDUAL INSPECTIONS FOR ITEMS LISTED ON THE SCHEDULE AND AS NOTED ON THE BUILDING DEPARTMENT APPROVED

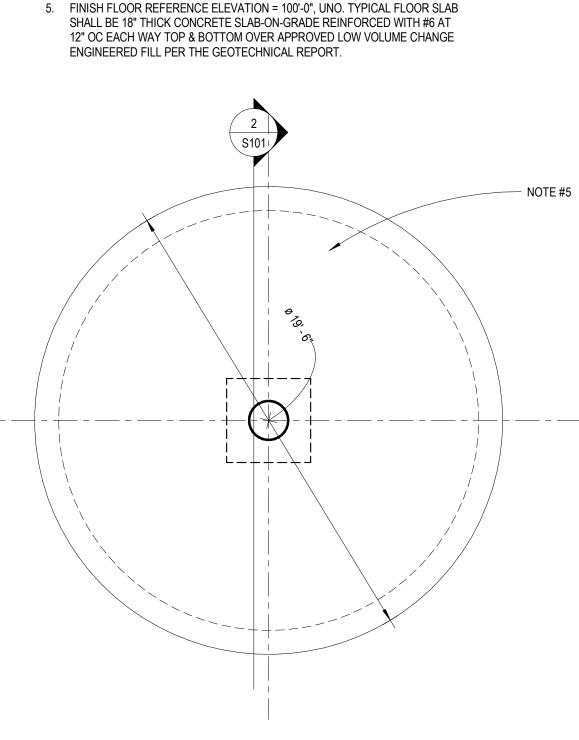
PLANS. ADEQUATE NOTICE AND ACCESS TO APPROVED PLANS SHALL BE PROVIDED SO THAT THE SPECIAL INSPECTOR HAS TIME TO BECOME FAMILIAR WITH THE PROJECT. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING CONSTRUCTION DOCUMENTS FOR ADDITIONAL NON-STRUCTURAL SPECIAL INSPECTION ITEMS.

3. IN ACCORDANCE WITH IBC CHAPTER 17, THE FOLLOWING TYPES OF WORK REQUIRE SPECIAL INSPECTIONS AND TESTING:

SPECIAL INSPECTION AND VERIFICATION OF CONCR REFERENCE IBC 2015, TABLE 1705.3	ETE CONSTRUC	CTION
VERIFICATION AND INSPECTION TASK	CONTINUOUS	PERIODIC
INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT		Х
REINFORCING BAR WELDING: A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706 B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16" C. INSPECT ALL OTHER WELDS	 X	X X
INSPECT ANCHORS CAST IN CONCRETE	Х	
 INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN A 	X 	 X
VERIFY USE OF REQUIRED DESIGN MIX.		Х
PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	Х	
INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	Х	
VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.		Х
INSPECT PRESTRESSED CONCRETE FOR: A. APPLICATION OF PRESTRESSING FORCES B. GROUTING OF BONDED PRESTRESSING TENDONS	X X	
INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.		Х
VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.		Х
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.		Х

SPECIAL INSPECTION AND VERIFICATION OR REFERENCE IBC 2015, TABLE 1705.6	OF SOILS
VERIFICATION AND INSPECTION TASK	CONTINU
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	х
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	

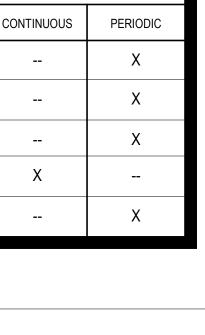




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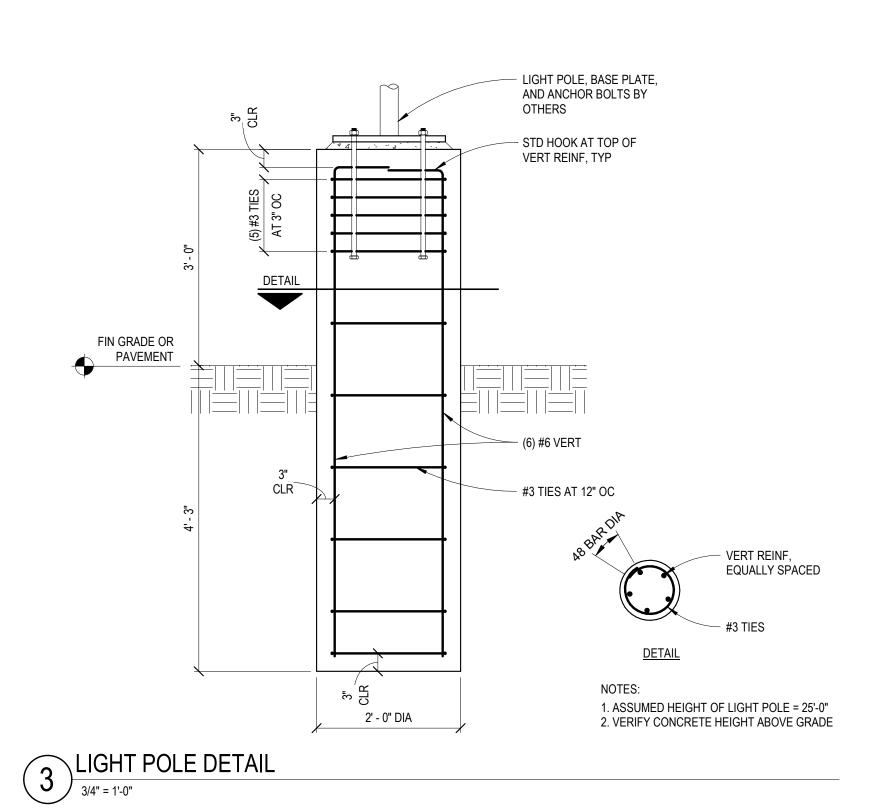
- 4. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE DURING CONSTRUCTION FOR THE SLAB AREA. SLAB SUBGRADE SHALL NOT BE ALLOWED TO RETAIN WATER DURING CONSTRUCTION.
- SLAB ELEVATIONS AND SLOPES WITH ARCHITECTURAL PLANS. 3. SEE MECHANICAL AND ARCHITECTURAL DRAWINGS FOR SIZES AND LOCATION OF PENETRATIONS NOT INDICATED ON STRUCTURAL DRAWINGS.
- 1. SEE SHEET S001 FOR GENERAL NOTES. 2. SEE ARCHITECTURAL PLANS FOR DIMENSIONS NOT SHOWN. COORDINATE

FOUNDATION PLAN NOTES



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1' - 0"





PJEEX CONVENIENCE OUTLET, +18" A.F.F. U.O.N., NUMBER DENOTES RCUIT, (EXAMPLE 3). WPLEX CONVENIENCE OUTLET, +18" A.F.F. U.O.N., NUMBER DENOTES RCUIT, (EXAMPLE 2). 1 DENOTES GROUND FAULT INTERRUPTING. P DENOTES IN-USE WEATHERPROOF COVER. DENOTES ISOLATED GROUND. DENOTES DEVICE MOUNTED ABOVE COUNTER. COORDINATE EXACT CATION WITH ARCHITECT PRIOR TO INSTALLATION. DENOTES EXISTING TO REMAIN. DENOTES EXISTING TO REMAIN. DENOTES EXISTING TO BE REMOVED. VECIAL RECEPTACLE OUTLET CONFIGURATION. DUBLE DUPLEX RECEPTACLE OUTLET. ALL MOUNTED JUNCTION BOX FOR POWER SERVICE TO PANEL 'STEM. NUMBER DENOTES CIRCUIT, EXAMPLE: 1) NOTION BOX, NUMBER DENOTES CIRCUIT (EXAMPLE 1) OOR MOUNTED OUTLET FOR POWER SERVICE, DATA SERVICE, AND LEPHONE SERVICE TO PANEL SYSTEM. PROVIDE FINAL CONNECTIONS PANEL SYSTEM. NUMBER DENOTES CIRCUIT TYPICAL (EXAMPLE: 1). DMBINATION FIRE RATED POWER/TELEPHONE/DATA OUTLET. NCTION BOX WITH BLANK COVER PLATE +18" A.F.F U.O.N., PROVIDE ASTER RING AND PULL STRING TO ACCESSIBLE CEILING SPACE. UTLET FOR CABLE TV. +18" A.F.F. U.O.N. FURNISH AND INSTALL NDUIT AND CABLE AS REQUIRED TO COMPLETE A FULLY OPERABLE 'STEM.	Sa S3 SD OS SOS P B 3	SINGLE POLE TOGGLE OR U.O.N. "a" INDICATES FIXT VOLTAGE SWITCHING TO C LINE VOLTAGE SWITCHING. THREE-WAY TOGGLE SWIT WALL BOX DIMMER SWITCH CEILING MOUNTED OCCUP/ WALL BOX OCCUPANCY SI PHOTO SENSOR FLUORESCENT FIXTURE. LO SWITCH, "a". UPPER CASE NUMERAL INDICATES PANE TYPE, AND CIRCUIT NUMB FIXTURES. WHERE TWO SV ONE LAMP OF TWO LAMP LAMP FIXTURES TO THE F THE REMAINING LAMP(S) FLUORESCENT FIXTURE. INCANDESCENT, FLUORESC INCANDESCENT, FLUORESC INCANDESCENT, FLUORESC WALL MOUNTED EGRESS F CEILING MOUNTED EGRESS
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LEPHONE OUTLET. WALL MOUNTED +46" A.F.F. U.O.N. PROVIDE		CONNECTED TO NEAREST EMERGENCY BALLAST WIR
	łs	POLE MOUNTED SPEAKER
DES OF DOOR, PROVIDE 3/4" CONDUIT STUBBED ABOVE ACCESSIBLE TILING ON "SECURE" SIDE OF WALL/DOOR. PROVIDE 3/4" CONDUIT TWEEN CARD READER BOXES. WHERE CARD READER LOCATED ON JBLIC SIDE ONLY, PROVIDE 3/4" CONDUIT STUBBED ABOVE CEILING N "SECURE" SIDE OF WALL/DOOR. INTERCONNECT TO BUILDING FIRE ARM SYSTEM TO RELEASE UPON FIRE ALARM. ELECTRICAL DNTRACTOR SHALL COORDINATE WITH THE SECURITY CONTRACTOR		
ANDARD INTERCONNECT TO BASE BUILDING FIRE ALARM SYSTEM. RIFY CAPACITY OF POWER SUPPLY. PROVIDE NEW POWER SUPPLY		
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REMAN'S COMMUNICATION JACK.		
OORDINATE EXACT REQUIREMENTS AND LOCATIONS WITH A/V		
SCONNECT SWITCH, FUSED.		
SCONNECT SWITCH, NON-FUSED.		
OMBINATION STARTER, FUSED.		
ABINET.		
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8' 16'

- R MOMENTARY CONTACT SWITCH, +46" A.F.F. IXTURES SWITCHED. ALSO USED IN LOW CONTROL REMOTE CONTACTOR OR IN DIRECT
- 1TCH, +46" A.F.F. U.O.N.
- CH, +46"A.F.F. U.O.N.
- PANCY SENSOR.
- SENSOR, +46" A.F.F. U.O.N.
- LOWER CASE LETTER INDICATES CONTROLLING SE LETTER INDICATES FIXTURE TYPE, i.e. "B". NEL CIRCUIT NUMBER, i.e. "3". SWITCH, FIXTURE. MBERS ARE TYPICAL FOR ALL LIGHTING SWITCHING DESIGNATIONS ARE SHOWN CIRUCIT IP FIXTURES AND OUTER LAMPS OF 3 AND 4 FIRST SWITCHING DESIGNATION SHOWN. AND TO THE SECOND DESIGNATION SHOWN.
- SCENT OR H. I. D. FIXTURE.
- SCENT OR H. I. D. FIXTURE, WALL MOUNTED.
- SCENT OR H. I. D. SCONCE.
- SCENT OR H. I. D. WALL WASHER.
- FIXTURE.
- SS FIXTURE.
- JRE, CEILING OR WALL MOUNTED, PROVIDE SHOWN. BRACKET DENOTES WALL MOUNTING. PARALLEL TO ADJACENT DOOR WHERE
- URE. CEILING OR WALL MOUNTED. PROVIDE S SHOWN. BRACKET DENOTES WALL MOUNTING ERPENDICULAR TO ADJACENT DOOR WHERE
- TO SHEET CONTAINING NUMBERED NOTES.
- QUIPMENT TO BE RELOCATED. COORDINATE NING PRIOR TO DEMOLITION AND
- NT FIXTURE. EMERGENCY LIGHT FIXTURE TO BE T LIFE SAFETY BRANCH CIRCUIT. REFER TO IRING DIAGRAM.
- ER PROVIDED AND INSTALLED BY OWNER.

ELECTRICAL GENERAL NOTES

- 1. COMBINATION OF HOMERUN CIRCUITS SHALL BE AS FOLLOWS:
- A. ALL CIRCUITS WITH SEPARATE HOMERUN ARROWS SHALL BE INSTALLED IN DEDICATED CONDUITS. DO NOT COMBINE WITH OTHER BRANCH CIRCUITS.
- B. ALL BRANCH CIRCUITS LARGER THAN 20A SHALL BE SEPARATELY HOMERUN TO PANEL.
- C. A MAXIMUM OF SIX 20A BRANCH CIRCUIT PHASE CONDUCTORS IN COMMON HOMERUN
- D. MINIMUM BRANCH CIRCUIT CONDUCTOR SHALL BE #12AWG, THHN.
- E. ALL 120V CIRCUITS SERVING NON-LIGHTING BRANCH CIRCUITS SHALL HAVE SEPARATE #12 AWG EQUIPMENT GROUNDING CONDUCTOR.
- 2. GROUNDING SYSTEM:
- A. GENERAL:
- 1. EXCEPT AS OTHERWISE NOTED, THE COMPLETE ELECTRICAL INSTALLATION, INCLUDING THE NEUTRAL CONDUCTOR, METALLIC CONDUITS AND RACEWAYS, BOXES, CABINETS, AND EQUIPMENT SHALL BE COMPLETELY AND EFFECTIVELY GROUNDED IN ACCORDANCE WITH ALL CODE REQUIREMENTS, WHETHER OR NOT SUCH CONNECTIONS ARE SPECIFICALLY SHOWN OR SPECIFIED.
- 2. RESISTANCE FROM GROUNDED SURFACE OF THE ELECTRICAL SYSTEM TO THE GROUND ELECTRODE AND TO EARTH SHALL NOT EXCEED 5 OHMS.
- **B. DISTRIBUTION SYSTEM GROUNDING:**
- 1. A BARE COPPER GROUND CONDUCTOR SHALL BE INSTALLED IN A NON-METALLIC CONDUIT OR DUCT; THIS CONDUCTOR IS NOT SHOWN ON THE DRAWINGS.
- C. BRANCH CIRCUIT GROUNDING:
- 1. ALL 120V CIRCUITS SERVING NON-LIGHTING BRANCH CIRCUITS SHALL HAVE SEPARATE GROUNDING CONDUCTORS.
- 3. IDENTIFYING DEVICES:

NAMEPLATES: TYPE NP; ENGRAVED BLACK BAKELITE, 1" X 3 1/2" MINIMUM, WITH 1/2" HIGH WHITE LETTERS, MACHINE SCREW RETAINED. FOR PERMANENT IDENTIFICATION OF ALL SWITCHBOARDS, CIRCUIT BREAKERS IN SEPARATE ENCLOSURES, MOTOR STARTERS, RELAYS. TIME SWITCHES AND OTHER CABINET-ENCLOSED APPARATUS INCLUDING TERMINAL CABINETS. THIS APPLIES TO ALL NEW EQUIPMENT AND ANY EXISTING ELECTRICAL EQUIPMENT.

4. CUTTING, PAINTING, AND PATCHING:

STRUCTURAL MEMBERS OR FLOOR SHALL IN NO CASE BE DRILLED. BORED OR NOTCHED IN SUCH A MANNER THAT WILL IMPAIR THEIR STRUCTURAL VALUE. CUTTING OF HOLES, IF REQUIRED, SHALL BE DONE WITH CORE DRILL AND ONLY WITH THE APPROVAL OF THE OWNER REPRESENTATIVE.

5. SUPERVISION:

CONTRACTOR SHALL PERSONALLY OR THROUGH AN AUTHORIZED AND COMPETENT REPRESENTATIVE CONSTANTLY SUPERVISE THE WORK FROM BEGINNING TO COMPLETION AND WITHIN REASON, KEEP THE SAME WORKMEN AND FOREMAN ON THE PROJECT THROUGHOUT THE PROJECT DURATION.

- 6. PENETRATIONS:
- A. METAL SLEEVES: EXPOSED EXTERIOR CONDUIT RUNS PASSING THROUGH CONCRETE FLOORS OR WALLS. FOLLOWING CONDUIT INSTALLATION, SEAL ALL PENETRATIONS USING NON-IRON BEARING. CHLORIDE FREE. NON-SHRINKING. DRY-PACK GROUTING COMPOUND. CONDUITS PENETRATING EXTERIOR BUILDING WALLS AND BUILDING FLOOR SLAB SHALL BE RIGID STEEL.
- B. FIRE SEPARATION WALLS/FLOORS: PACK OPENING AROUND CONDUITS OR CABLES WITH FIRE BARRIER CAULK STI SPEC SEAL LCI INTUMESCENT FIRESTOP SEALANT.
- 7. ACCURACY:
- A. DRAWINGS FOR THE WORK UNDER THIS SECTION ARE DIAGRAMMATIC.
- B. CONTRACTOR SHALL VERIFY LINES, LEVELS AND DIMENSIONS SHOWN ON THE DRAWINGS AND SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE SETTING OUT OF WORK AND FOR ITS STRICT CONFORMANCE WITH EXISTING CONDITIONS AT THE SITE.
- 8. LOCATIONS OF CONDUIT RUNS:

PLAN IN ADVANCE OF THE INSTALLATION AND COORDINATE WITH DUCTWORK. PLUMBING. CEILING AND WALL CONSTRUCTION IN THE SAME AREAS AND NOT NECESSARILY CROSS OTHER CONDUITS OR PIPE. NOR PREVENT REMOVAL OF CEILING TILES OR PANELS. NOR BLOCK ACCESS TO MECHANICAL OR ELECTRICAL EQUIPMENT.

- WHERE PRACTICAL, INSTALL CONDUITS IN GROUPS IN PARALLEL. VERTICAL. OR HORIZONTAL RUNS AND AT ELEVATIONS THAT AVOID UNNECESSARY OFF-SETS.
- **10. PROTECTION OF EQUIPMENT:**

KEEP CONDUITS, JUNCTION BOXES, OUTLET BOXES AND OTHER OPENINGS CLOSED TO PREVENT ENTRY OF FOREIGN MATTER. COVER FIXTURES, EQUIPMENT, DEVICES, AND APPARATUS TO PROTECT THEM AGAINST DIRT. PAINT. WATER. CHEMICAL OR MECHANICAL DAMAGE. BEFORE AND DURING CONSTRUCTION PERIOD. RESTORE TO ORIGINAL CONDITION ANY FIXTURE. APPARATUS OR EQUIPMENT DAMAGED PRIOR TO FINAL ACCEPTANCE. INCLUDE RESTORATION OF DAMAGED SHOP COATS OF PAINT BEFORE FINAL ACCEPTANCE. PROTECT BRIGHT FINISHED SURFACES AND SIMILAR ITEMS UNTIL IN SERVICE. NO RUST OR DAMAGE WILL BE PERMITTED.

- TIMES.

11. MATERIALS AND WORK SHALL BE DONE ACCORDING TO BASE BUILDING STANDARDS AND PRACTICES

12. WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS OF ALL GOVERNING CODES, RULES AND REGULATIONS. INCLUDING THE FOLLOWING MINIMUM STANDARDS. WHETHER STATUTORY OR NOT:

1. NATIONAL ELECTRICAL CODE (NEC). 2. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). 3. INTERNATIONAL BUILDING CODE (IBC) 4. INTERNATIONAL MECHANICAL CODE (IMC) 5. AMERICAN DISABILITIES ACT (ADA) 6. BASE BUILDING SPECIFICATIONS

13. EQUIPMENT AND MATERIALS SPECIFIED UNDER THIS DIVISION SHALL CONFORM TO THE FOLLOWING STANDARDS WHERE APPLICABLE:

1. UNDERWRITER'S LABORATORIES (UL). 2. AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM). 3. CERTIFIED BALLAST MANUFACTURERS (CBM) 4. INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA). 5. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA). 6. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI). 7. ELECTRICAL TESTING LABORATORIES (ETL).

14. WHERE CEILING SPACE IS A RETURN AIR PLENUM. ALL WIRING IN CEILING SPACE MUST BE IN CONDUIT OR USE TEFLON JACKETED CABLE TO MEET RETURN AIR PLENUM REQUIREMENTS.

15. ALL BASE BUILDING 2X2 AND 2X4 RECESSED FLUORESCENT FIXTURES TO REMAIN SHALL HAVE THE LOUVER CLEANED AND RELAMPED. ALL ELECTRICAL DEVICES, 2X2 AND 2X4 FIXTURES SHALL BE BUILDING STANDARD U.O.N.

16. LIGHTING FIXTURES DESIGNATED AS "BUILDING STANDARD" MAY BE PURCHASED FROM LANDLORD STOCK (IF AVAILABLE) OR SHALL EXACTLY MATCH THE BUILDING STANDARD FIXTURES AS DEFINED BY THE LANDLORD.

17. CONTRACTOR TO LOCATE ALL LIGHTING FIXTURES PER ARCHITECTURAL REFLECTED CEILING PLANS.

18. ELECTRICAL CONTRACTOR TO COORDINATE THE MOUNTING HEIGHTS AND LOCATIONS OF ALL COMMUNICATION OUTLETS AND RECEPTACLES WITH ARCHITECTURAL DETAILS.

19. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FLOOR DEVICES. LOCATIONS SHALL BE IN ACCORDANCE WITH ALL UNDERWRITERS LABORATORIES AND LOCAL AUTHORITY REQUIREMENTS. IN NO CASE SHALL FIRE RATED POKE-THROUGH DEVICES BE INSTALLED LESS THAN 24" ON CENTER AND/OR MORE THAN ONE (1) PENETRATION PER 65 SQUARE FEET OF FLOOR AREA OF BEAM SPACE.

20. ALL EXISTING FLOOR OUTLETS WHICH ARE NOT USED FOR THIS TENANT IMPROVEMENT LEASE SHALL BE REMOVED AND THE SLAB PENETRATION SHALL BE REPAIRED TO RESTORE ORIGINAL FIRE RESISTANCE AND STRUCTURAL INTEGRITY.

21. IN AREAS WHERE COMMUNICATION OUTLETS ARE INSTALLED IN A WALL OF ROOM WITH GYPBOARD CEILING, CONTRACTOR SHALL INSTALL 3/4" CONDUIT FROM OUTLET TO ACCESSIBLE CEILING.

22. CONTRACTOR SHALL INSTALL A PULL STRING IN ALL EMPTY CONDUITS.

23. WHERE THERE ARE MORE THAN (1) SWITCH OR DIMMING DEVICE IN A LOCATION, CONTRACTOR SHOULD GANG DEVICES, PROVIDE AND INSTALL MULTI-GANG COVERPLATE.

24. SURFACE MOUNTED PANELS, DEVICES, AND RACEWAY WILL ONLY BE ALLOWED IN MECHANICAL AREAS U.O.N.

25. CONTRACTOR SHALL SURVEY SITE TO CONFIRM FIELD CONDITIONS SUCH AS LOCATION OF LIGHTING AND POWER JUNCTION BOXES. CONFIRM SPARE CIRCUITS IN PANELS, AND CONFIRM FIRE ALARM WIRING.

26. DRAWINGS SHOW FINAL LOCATION OF LIGHTING FIXTURES AND POWER OUTLETS. THEY DO NOT NECESSARILY SHOW ALL DEMOLITION OF ELECTRICAL DEVICES OR FIXTURES THAT SHOULD OCCUR. HOWEVER, ALTHOUGH NOT SPECIFICALLY SHOWN TO BE REMOVED. CONTRACTOR SHALL PERFORM NECESSARY DEMOLITION SUCH THAT THE FINAL ELECTRICAL SYSTEM REFLECTS THE LIGHTING AND POWER WHICH SHOWN ON THE PLAN DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING THESE CONDITIONS.

27. THE SPACE ALLOCATION SHOWN ON THE PLAN DRAWINGS ARE BASED ON ONLY ONE MANUFACTURER. THE CONTRACTOR SHALL VERIFY THAT THE PROPOSED SWITCH GEAR (INCLUDING SWITCHBOARDS, PANELBOARDS AND TRANSFORMERS) WILL SATISFY THE SPACE REQUIREMENTS SHOWN ON THE DRAWINGS.

28. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EXISTING ELECTRICAL SERVICE TO ALL REMAINING AREAS OF THE FACILITY THROUGHOUT THE PROJECT EXCEPT DURING SCHEDULED SHUTDOWN

ANY SHUTDOWNS OF THE EXISTING FACILITY SHALL BE MUTUALLY AGREED UPON BY OWNER AND CONTRACTOR. CONTRACTOR SHALL GIVE OWNER MINIMUM OF TWO WEEKS NOTICE OF ANY SHUTDOWNS OF EXISTING FACILITY.

29. DURING BIDDING PROCESS, CONTRACTOR SHALL SURVEY EXISTING BUILDING SYSTEMS TO VERIFY EXTENT AND COMPATIBILITY WITH NEW ELECTRICAL SYSTEMS. CONTRACTOR SHALL INCLUDE MISCELLANEOUS DEVICES NECESSARY TO COMPLETE A FULL WORKING SYSTEM, FOR EXAMPLE MOTOR STARTER HEATERS AND STARTER EXHAUST CONTACTS.

30. ALL RECEPTACLES SHALL BE NEMA 5-20R U.O.N.

31. ALL 120V, 20 AMP HOME RUNS LONGER THAN 100' AND ALL 277V, 20 AMP HOME RUNS LONGER THAN 150' SHALL BE #10 MINIMUM.

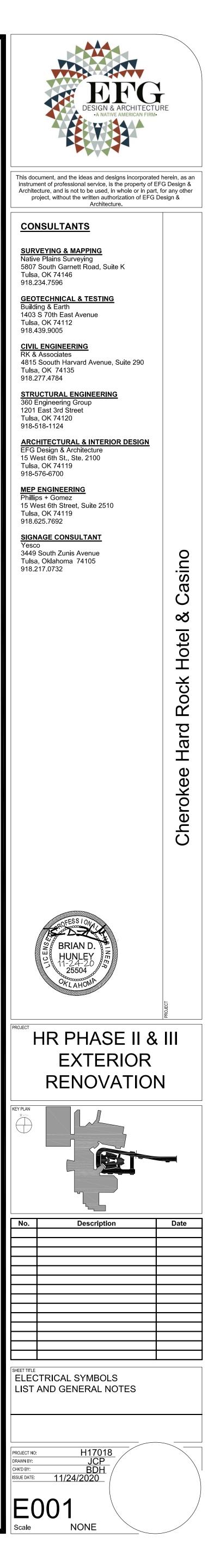
- 32. FOLLOWING ADDITION OF NEW LOADS TO PANEL ON FLOOR FOR TENANT DEVELOPMENT, UPDATE PANEL SCHEDULE WITH SPACE AND LOAD ON TYPEWRITTEN CARD. MAKE COPY OF NEW PANEL SCHEDULE AND SUBMIT TO ENGINEER FOR APPROVAL FOLLOWING CONSTRUCTION COMPLETION.
- 33. FOLLOWING ADDITION AND TESTING OF EMERGENCY LIGHTING, UPDATE EMERGENCY LIGHTING PANEL SCHEDULE WITH FLOOR, SPACE AND LOAD. SUBMIT TEST RESULTS AND A COPY OF NEW PANEL SCHEDULE TO ENGINEER FOR APPROVAL FOLLOWING CONSTRUCTION COMPLETION.
- 34. TEST ALL NEW AND EXISTING FIRE ALARM DEVICES WITHIN THE TENANT SPACE, INCLUDING, BUT NOT LIMITED TO, MANUAL PULL STATIONS, STROBES AND VOICE EVACUATION SPEAKERS AND SUBMIT TEST RESULTS TO ENGINEER FOR APPROVAL FOLLOWING CONSTRUCTION COMPLETION.
- 35. CONTRACTOR SHALL ALLOW A MAXIMUM OF 5% VOLTAGE DROP ON ALL EMERGENCY BRANCH CIRCUITS THROUGHOUT THE AREAS UNDER THIS CONTRACT. CONTRACTOR SHOULD SIZE THE EMERGENCY BRANCH CIRCUITS FEEDERS ACCORDINGLY TO MAINTAIN THE MAXIMUM VOLTAGE DROP AS LISTED ABOVE.
- 36. CONTRACTOR SHALL MAINTAIN MINIMUM SEPARATION OF 24" BETWEEN TELEPHONE CONDUIT AND PRIMARY CONDUIT.
- 37. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING CIRCUITS SERVING THE PRESENT LEASE SPACE AND THE EXISTING SPARE CIRCUITS IN THE PANELBOARDS SERVING THIS LEASE SPACE AND SHALL REPORT ANY FIELD CONDITIONS REQUIRING CIRCUITING DEVIATIONS IN WRITING TO THE ENGINEER FOR DIRECTION PRIOR TO PROCEEDING WITH CONSTRUCTION.
- 38. ALL EXISTING CONDUIT AND CONDUCTORS SERVING THE AREA UNDER CONTRACT NOT TO BE RE-USED SHALL BE TERMINATED AT LAST PORTION OF CIRCUIT REQUIRING ENERGIZATION BEFORE THE DEMOLITION AREA. IF A CIRCUIT SERVICES ONLY THE DEMOLITION AREA, REMOVE ALL CONDUITS AND CONDUCTORS BACK TO THE PANELBOARD AND DE-ENERGIZE THE CIRCUIT BREAKER, MAKING IT SPARE. NOTE SPARE ON PANELBOARD DIRECTORY.
- 39. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING STARTER TYPE, OVERLOAD SIZE, AND DISCONNECT SIZE FOR ALL MOTORS IN EACH AIR HANDLER UNIT ROOM WITH MECHANICAL CONTRACTOR.
- 40. CONTRACTOR TO REFER TO PLUMBING DRAWINGS FOR EXACT LOCATION OF ALL FLOW SWITCHES. CONTRACTOR TO PROVIDE CONNECTION TO FLOW SWITCHES FROM FIRE ALARM SYSTEM. CONTRACTOR TO ALSO PROVIDE CONNECTION TO ALL TAMPER SWITCHES FOR EXACT LOCATIONS COORDINATE WITH FIRE PROTECTION (SPRINKLER) CONTRACTOR.

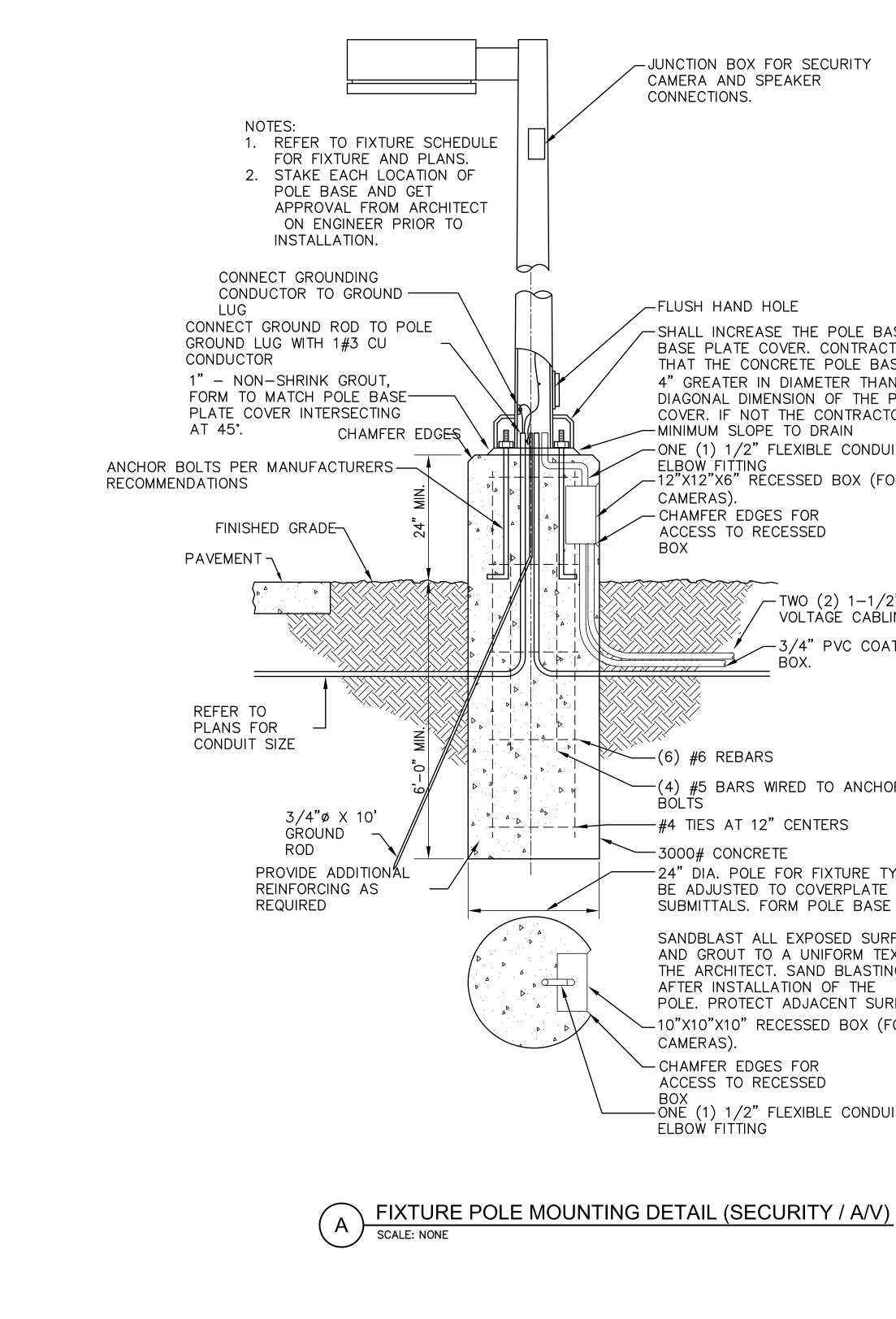
THE TAMPER SWITCHES WILL BE PROVIDED AT ALL FIRE PROTECTION VALVES EXCEPT FIRE DEPARTMENT HOSES.

- 41. SUBMITTALS
- A. GENERAL: REFER TO GENERAL CONDITIONS FOR SUBMITTAL PROCEDURES AND REQUIREMENTS.
- B. FORMAT: FURNISH SUBMITTAL DATA NEATLY BOUND IN AN 8-1/2" X 11" FOLDER OR BINDER WITH A TABLE OF CONTENTS LISTING SPECIFICATION SECTION. SUBMITTAL DATA ON ALL ELECTRICAL EQUIPMENT (PANELBOARDS. LIGHT FIXTURES. ETC.) SHALL BE MODIFIED. AS NECESSARY. TO BECOME "AS BUILT" DOCUMENTS.
- C. SUBMITTALS SHALL CONSIST OF DETAILED SHOP DRAWINGS, SPECIFICATIONS. "CATALOG CUTS" AND DATA SHEETS CONTAINING PHYSICAL AND DIMENSIONAL INFORMATION, PERFORMANCE DATA, ELECTRICAL CHARACTERISTICS, MATERIALS USED IN FABRICATION, MATERIAL FINISH AND SHALL CLEARLY INDICATE THOSE OPTIONAL ACCESSORIES WHICH ARE INCLUDED AND THOSE WHICH ARE EXCLUDED.
- D. SUBMIT SHOP DRAWINGS FOR:
- 1. PANELBOARDS.
- E. SUBMIT MANUFACTURER'S DATA FOR:
- 1. LIGHTING FIXTURES.
- 2. WIRING DEVICES AND DEVICE PLATES (ALL TYPES).
- 3. FIRE ALARM DEVICES. 4. TRANSFORMERS.
- 5. DISCONNECT SWITCHES.
- 6. PANELBOARDS 7. MOTOR STARTERS
- 8. METERS

42. THE CONTRACTOR IS RESPONSIBLE FOR SURVEYING THE SITE TO DETERMINE ALL EXISTING CONDITIONS RELATED TO THE NEW BUILDING. THIS INCLUDES ALL EXISTING UNDERGROUND UTILITIES. CONTRACTOR SHALL MAKE PROVISIONS FOR CROSSING, DISCONNECTING IN THE EVENT NEW UTILITY SERVICE TO NEW BUILDING ARE ROUTED THRU THESE AREAS.

- 43. CONTRACTOR TO COORDINATE WITH LANDSCAPE PLANS FOR ACTUAL LOCATION OF ALL EXTERIOR LANDSCAPE FIXTURES.
- 44. CONTRACTOR SHALL REVIEW ALL TRENCHING ON SITE WITH LANDSCAPE ARCHITECT AND OBTAIN APPROVAL BEFORE PERFORMING WORK.
- 45. ALL FIRE DETECTION SYSTEM WORK SHALL BE PERFORMED BY JOHNSON CONTROLS.
- 46. CONTRACTOR RESPONSIBLE TO FILL ALL NEW AND EXISTING FLOOR PENETRATIONS WITH FIRE-STOPPING MATERIAL TO RESTORE BUILDING FIRE INTEGRITY.
- 47. ALL LOW VOLTAGE INSTALLED IN CABLE TRAY TO BE PLENUM RATED. FIRE ALARM CABLING AND CONDUITS TO MATCH BUILDING STANDARDS.





ELECTRICAL NUMBERED NOTES

- 1. PROVIDE NEW 6 X6 X2' GUTTER FOR PENETRATION INTO BUILDING. ROUTE TWO (2) 4" CONDUITS WITH FOUR (4) 1" INNERDUCTS EACH UP INTERIOR WALL OF STORAGE ROOM AND THROUGH CEILING TO IDF-35.
- VERIFY EXACT LOCATION AND CONDUIT ROUTING WITH OWNER. 2. PROVIDE TWO (2) 4" CONDUITS WITH FOUR (4) 1" INNERDUCTS EACH FROM WALL MOUNTED GUTTER TO IN GRADE
- PULL BOX. VERIFY ROUTING WITH OWNER. PROVIDE ONE (1) 17"X30"X24" QUAZITE IN-GRADE PULL BOX FOR LOW VOLTAGE CABLE ROUTING TO SITE. VERIFY EXACT LOCATION WITH OWNER.
- 4. PROVIDE ONE (1) 4" CONDUIT WITH FOUR (4) 1" INNERDUCTS FROM QUAZITE PULL BOX TO MONUMENT
- SIGN. PROVIDE THIRTY-SIX (36) WESTPENN 454BK DMX CABLES IN TWO (2) 1" INNDERDUCTS FROM IDF-35 TO MONUMENT SIGN FOR LIGHTING CONTROL. VERIFY EXACT QUANTITY OF CABLES WITH OWNER.
- 5. PROVIDE ONE (1) 24"X24"X18" JUNCTION BOX FOR MONUMENT SIGN LIGHTING CONTROLS. VERIFY EXACT LOCATION AND REQUIREMENTS WITH MONUMENT SIGN MANUFACTURER AND OWNER.
- 6. PROVIDE ONE (1) 24"X24"X18" JUNCTION BOX FOR ELECTRICAL SERVICE TO MONUMENT SIGN. VERIFY EXACT LOCATION AND ÉLECTRICAL REQUIREMENTS WITH MONUMENT SIGN MANUFACTURER AND OWNER. CIRCUIT AS INDICATED.
- 7. PROVIDE ONE (1) DOUBLE DUPLEX RECEPTACLE RECESSED IN POLE BASE JUNCTION BOX FOR ELECTRICAL SERVICE TO SECURITY CAMERA. CIRCUIT AS INDICATED.
- 8. PROVIDE ONE (1) 12 STRAND SINGLE MODE ARMORED FIBER CABLE AND ONE (1) WESTPENN 25296B SPEAKER CABLE IN 1-1/2" CONDUIT FROM IDF-35 TO LIGHT POLE FOR DATA SERVICE TO SECURITY CAMERAS AND SPEAKERS. TERMINATE TWO (2) STRANDS OF FIBER CABLE AT EACH POLE REQUIRING SECURITY CAMERAS WITH LC CONNECTORS. DAISY CHAIN SPEAKER CABLE TO EACH POLE REQUIRING SPEAKERS. VERIFY EXACT LOCATION OF SECURITY CAMERAS AND SPEAKERS WITH OWNER.
- 9. PROVIDE NEW FACEPLATE INTO EXISTING PANEL SP1 TO ADD CAPACITY FOR NEW SINGLE POLE BREAKERS. PROVIDE NEW CIRCUIT BREAKERS AS REQUIRED.
- 10. PROVIDE NEW CIRCUIT BREAKERS INTO PANEL SP1A AS NEEDED.
- 11. PROVIDE THREE (3) 30A SINGLE POLE CIRCUIT BREAKERS INTO PANEL SP1 FOR ELECTRICAL SERVICE TO MONUMENT SIGN. VERIFY ELECTRICAL REQUIREMENTS WITH MONUMENT SIGN MANUFACTURER.

-JUNCTION BOX FOR SECURITY CAMERA AND SPEAKER CONNECTIONS.

-SHALL INCREASE THE POLE BASE DIAMETERPOLE BASE PLATE COVER. CONTRACTOR SHALL VERIFY THAT THE CONCRETE POLE BASE IS A MINIMUM OF 4" GREATER IN DIAMETER THAN THE MAXIMUM DIAGONAL DIMENSION OF THE POLE BASE PLATE COVER. IF NOT THE CONTRACTOR ACCORDINGLY. -MINIMUM SLOPE TO DRAIN -ONE (1) 1/2" FLEXIBLE CONDUIT WITH SHORT RADIUS ELBOW FITTING 12"X12"X6" RECESSED BOX (FOR FIXTURE POLES WITH SECURITY - CHAMFER EDGES FOR ACCESS TO RECESSED TWO (2) 1-1/2" PVC COATED RIGID CONDULT FOR LOW VOLTAGE CABLING. REFER TO SITE PLAN FOR ROUTING -3/4" PVC COATED RIGID CONDUIT FOR POWER TO QUAD BOX

(6) #6 REBARS

-(4) #5 BARS WIRED TO ANCHOR

-#4 TIES AT 12" CENTERS

-3000# CONCRETE -24" DIA. POLE FOR FIXTURE TYPE "XX". DIAMETER WILL BE ADJUSTED TO COVERPLATE DIMENSION AFTER SUBMITTALS. FORM POLE BASE IN A SONNO TUBE FORM.

SANDBLAST ALL EXPOSED SURFACES ON THE CONCRETE AND GROUT TO A UNIFORM TEXTURE AS APPROVED BY THE ARCHITECT. SAND BLASTING SHALL BE APPLIED AFTER INSTALLATION OF THE POLE. PROTECT ADJACENT SURFACES FROM DAMAGE. -10"X10"X10" RECESSED BOX (FOR FIXTURE POLES WITH SECURITY └── CHAMFER EDGES FOR

ACCESS TO RECESSED

BOX -ONE (1) 1/2" FLEXIBLE CONDUIT WITH SHORT RADIUS ELBOW FITTING

NOTES:

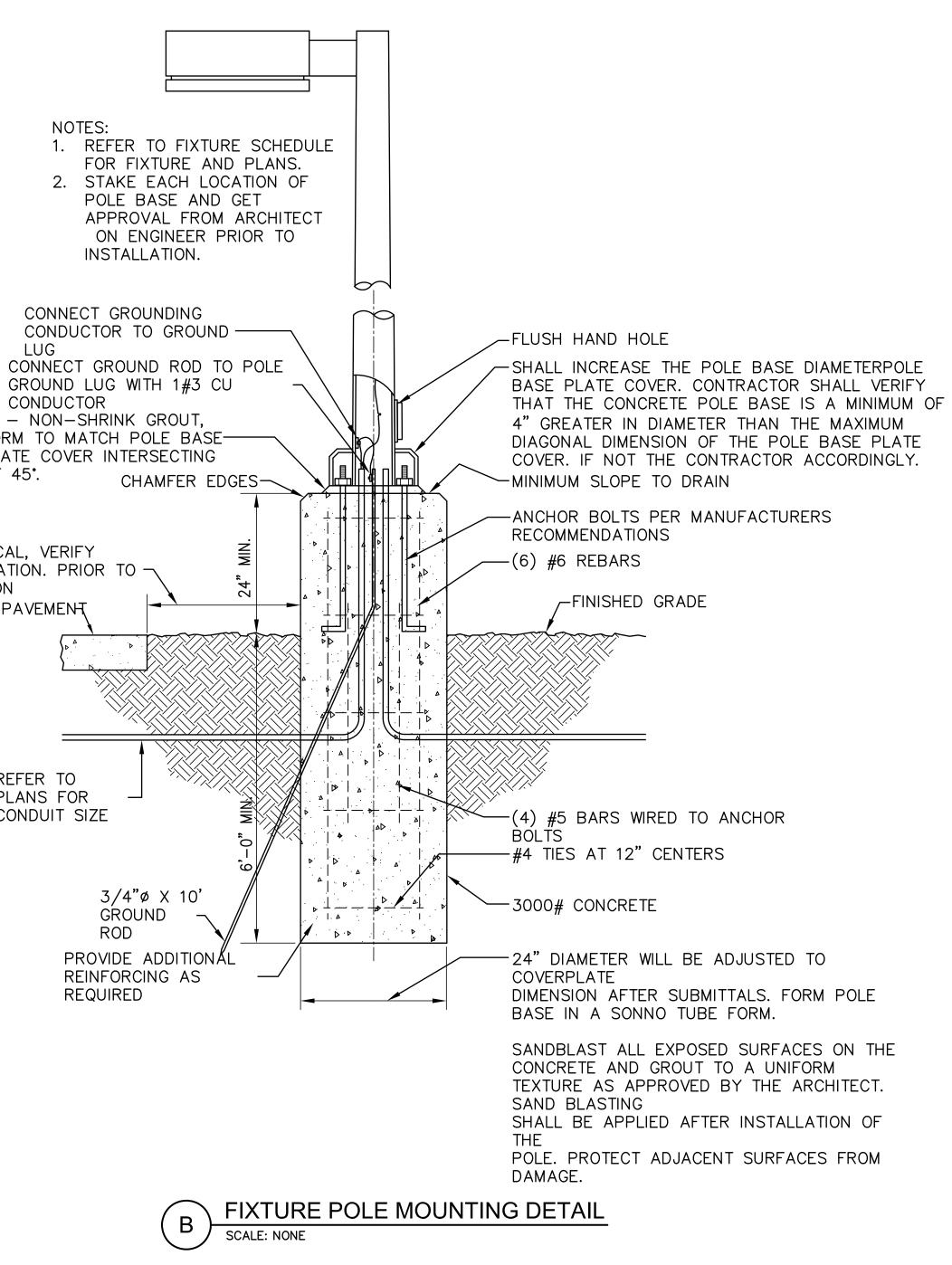
CONNECT GROUNDING LUG GROUND LUG WITH 1#3 CU CONDUCTOR 1" - NON-SHRINK GROUT, FORM TO MATCH POLE BASE-----PLATE COVER INTERSECTING AT 45°.

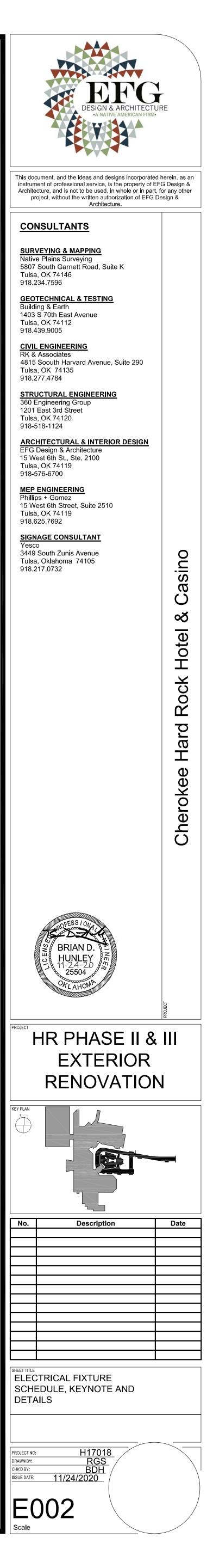
3'-0" TYPICAL, VERIFY EXACT LOCATION. PRIOR TO -INSTALLATION PAVEMENT

REFER TO PLANS FOR CONDUIT SIZE

> ROD REQUIRED

	FIX	TURE SC	CHEDULE
TYPE	MANUFACTURER & CATALOG NUMBER	LAMP QUANTITY/TYPE MANUFACTURER	DESCRIPTION
A	VISIONAIRE LIGHTING BLX-II SERIES BLX-6-T3-128LC-5-UNV -KM-BZ OR EQUAL BY MCGRAW- EDISON OR PHILLIPS	LED FURNISHED WITH FIXTURE	POLE-MOUNTED LED FIXTURE ASSEMBLY WITH 20'-0" POLE AND TYPE III DISTRIBUTION. FURNISH WITH 277V OPERATION AND BRONZE FINISH. PROVIDE POLE THAT IS COMPATIBLE TO RUN LOW VOLTAGE CABLE FOR SPEAKERS AND SECURITY CAMERAS. REFER TO PLANS FOR LOCATIONS OF SECURITY CAMERAS. ALL SPEAKER AND CAMERA LOCATIONS TO HAVE 30" CONCRETE BASE WITH 12"X12"X6" RECESSED JUNCTION BOX. PROVIDE DOCUMENTATION FROM FIXTURE MANUFACTURER FOR THE FIELD REPLACEABLE LED LAMPS OR LED LAMP MODULES FOR FUTURE LED LAMP REPLACEMENT. PROVIDE FIVE (5) YEAR MINIMUM COMPLETE MATERIALS AND LABOR REPLACEMENT WARRANTY FOR LIGHT FIXTURE.





SECTION 16010 ELECTRICAL GENERAL PROVISIONS

PART I GENERAL

1.01 DESCRIPTION

A. GENERAL: FURNISH LABOR, MATERIALS, APPARATUS, TOOLS, EQUIPMENT, TRANSPORTATION, TEMPORARY CONSTRUCTION AND SERVICES AS REQUIRED TO MAKE A COMPLETE WORKING ELECTRICAL INSTALLATION. AS SHOWN ON THE DRAWINGS OR DESCRIBED IN THESE SPECIFICATIONS. THE WORK SHALL INCLUDE MATERIALS, APPLIANCES AND APPARATUS NOT SPECIFICALLY MENTIONED HEREIN OR NOTED ON THE DRAWINGS, BUT REQUIRED FOR A COMPLETE INSTALLATION. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND UNUSED UNLESS OTHERWISE SPECIFIED. IN ADDITION, IT SHALL INCLUDE CONNECTION, INTERCONNECTION, AND POWER FOR ELECTRICAL EQUIPMENT FURNISHED UNDER OTHER SECTIONS.

CONTRACTOR SHALL REVIEW ALL CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ARCHITECTURAL CEILING PLANS, ARCHITECTURAL DETAILS, DOOR HARDWARE SCHEDULES, AND MECHANICAL DOCUMENTS. ALL POWER SERVICE WIRING. BRANCH CIRCUIT WIRING, CONTROL WIRING OR OTHER WIRING NECESSARY FOR COMPLETE OPERATION OF EQUIPMENT OR FIXTURES, NOT SPECIFICALLY REQUIRED TO BE INSTALLED UNDER ANOTHER SECTION OF THIS SPECIFICATION, SHALL BE PROVIDED WHETHER OR NOT SUCH WIRING IS SPECIFICALLY SHOWN ON ELECTRICAL DRAWINGS OR DESCRIBED IN DIVISION 16 SPECIFICATIONS.

- B. WORK INCLUDED:
- 1. WORK DESCRIBED IN DIVISION 16.
- 2. ELECTRICAL WORK REQUIRED FOR CORRECT ELECTRICAL OPERATION OF EQUIPMENT AND APPARATUS FURNISHED UNDER DIVISION 15.
- ELECTRICAL WORK REQUIRED FOR CORRECT ELECTRICAL OPERATION OF EQUIPMENT FURNISHED UNDER ALL OTHER DIVISIONS OF THIS SPECIFICATION OR ON DRAWINGS.
- C. WORK FURNISHED AND INSTALLED UNDER ANOTHER SECTION REQUIRING POWER SUPPLY WIRING AND/OR CONNECTIONS UNDER THIS SECTION:
- ELECTRIC MOTORS
- 2. PACKAGE MECHANICAL EQUIPMENT; FANS, PUMPS, COMPRESSORS. ETC.
- TEMPERATURE CONTROL EQUIPMENT POWER SUPPLY WIRING.
- D. THE CONTRACTOR SHALL NOTIFY THE ENGINEER. ARCHITECT AND CONSTRUCTION MANAGER IF THE DELIVERY SCHEDULE OF ANY SPECIFIED PRODUCT WILL PROHIBIT THE CONSTRUCTION TO BE COMPLETED AS SCHEDULED. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY EXPEDITED DELIVERY COSTS WHICH MAY BE NECESSARY TO ACCOMPLISH THE COMPLETION SCHEDULE. ALL NOTIFICATIONS SHALL BE MADE IN WRITING A MINIMUM OF SEVEN BUSINESS DAYS PRIOR TO THE BID DATE.
- E. ALL REQUESTS FOR PRODUCT SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER, ARCHITECT AND CONSTRUCTION MANAGER. ALL REQUESTS SHALL BE MADE IN WRITING A MINIMUM OF SEVEN BUSINESS DAYS PRIOR TO THE BID DATE
- 1.02 GENERAL REQUIREMENTS, CODES AND STANDARDS
- A. REFERENCE TO CODES, STANDARDS, SPECIFICATIONS AND RECOMMENDATIONS OF TECHNICAL SOCIETIES, TRADE ORGANIZATIONS AND GOVERNMENTAL AGENCIES SHALL MEAN THAT LATEST EDITION OF SUCH PUBLICATIONS ADOPTED AND PUBLISHED PRIOR TO SUBMITTAL OF THE BID PROPOSED. SUCH CODES OR STANDARDS SHALL BE CONSIDERED A PART OF THIS SPECIFICATION AS THOUGH FULLY REPEATED HEREIN.
- B. WHEN CODES, STANDARDS, REGULATIONS, ETC. ALLOW WORK OF LESSER QUALITY OR EXTENT THAN IS SPECIFIED UNDER THIS DIVISION. NOTHING IN SAID CODES SHALL BE CONSTRUED OR INFERRED AS REDUCING THE QUALITY, REQUIREMENTS OR EXTENT OF THE DRAWINGS AND SPECIFICATIONS.
- C. WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS OF ALL GOVERNING CODES, RULES AND REGULATIONS, INCLUDING THE FOLLOWING MINIMUM STANDARDS, WHETHER STATUTORY OR NOT:
- NATIONAL ELECTRIC CODE (NEC).
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). AMERICAN DISABILITY ACT (ADA)
- LOCAL CODES AND AMENDMENTS
- ADOPTED ENERGY CODE
- BASE BUILDING STANDARDS UNIFORM BUILDING CODE (UBC)
- D. EQUIPMENT AND MATERIALS SPECIFIED UNDER THIS DIVISION SHALL CONFORM TO THE FOLLOWING STANDARDS WHERE APPLICABLE:
- UNDERWRITER'S LABORATORIES (UL).
- AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM).
- CERTIFIED BALLAST MANUFACTURERS (CBM). INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA).
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI). ELECTRICAL TESTING LABORATORIES (ETL).

BASE MATERIAL SHALL BE ASTM AND/OR ANSI STANDARDS. ELECTRICAL APPARATUS FURNISHED UNDER THIS SECTION SHALL CONFORM TO NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) STANDARDS AND THE NEC AND BEAR THE UNDERWRITER'S LABORATORIES (UL) LABEL WHERE SUCH LABEL IS APPLICABLE.

- 1.03 CUTTING, PAINTING AND PATCHING
- A. STRUCTURAL MEMBERS SHALL IN NO CASE BE DRILLED, BORED OR NOTCHED IN SUCH A MANNER THAT WILL IMPAIR THEIR STRUCTURAL VALUE. CUTTING OF HOLES, IF REQUIRED, SHALL BE DONE WITH CORE DRILL AND ONLY WITH THE APPROVAL OF THE ARCHITECT AND OF THE BUILDING MANAGEMENT.
- 1.04 PENETRATIONS:
- A. METAL SLEEVES: EXPOSED EXTERIOR CONDUIT RUNS PASSING THROUGH CONCRETE FLOORS OR WALLS. FOLLOWING CONDUIT INSTALLATION, SEAL ALL PENETRATIONS USING NON-IRON BEARING, CHLORIDE FREE. NON-SHRINKING. DRY-PACK GROUTING COMPOUND. CONDUITS PENETRATING EXTERIOR BUILDING WALLS

AND BUILDING FLOOR SLAB SHALL BE RIGID STEEL

- B. FIRE SEPARATION WALLS/FLOORS: PACK OPENING CONDUITS OR CABLES WITH FIRE BARRIER CAULK NELSON FLAMESEAL.
- 1.05 SUPERVISION
- A. CONTRACTOR SHALL PERSONALLY OR THROUGH AN AND COMPETENT REPRESENTATIVE CONSTANTLY SU WORK FROM BEGINNING TO COMPLETION AND WITH THE SAME WORKMEN AND FOREMAN ON THE PROJECT THROUGHOUT THE PROJECT DURATION.
- 1.06 PROTECTION
- A. KEEP CONDUITS. JUNCTION BOXES. OUTLET BOXES AND OTHER OPENINGS CLOSED TO PREVENT ENTRY OF FOREIGN MATTER. COVER FIXTURES, EQUIPMENT, DEVICES, APPARATUS AND PROTEC THEM AGAINST DIRT, PAINT, WATER, CHEMICAL OR MECHANICAL DAMAGE, BEFORE AND DURING CONSTRUCTION PERIOD. RESTORE TO ORIGINAL CONDITION ANY FIXTURE, APPARATUS OR EQUIPMENT DAMAGED PRIOR TO FINAL ACCEPTANCE. PROTECT BRIGHT FINISHED SURFACES AND SIMILAR ITEMS UNTIL IN SERVICE. NO RUST OR DAMAGE WILL BE PERMITTED
- 1.07 EXAMINATION OF SITE
- A. THE CONTRACTOR SHALL VISIT THE SITE AND DETERMINE THE LOCAL, WORKING CONDITIONS, CONFLICTING UTILITIES AND THE CONDITIONS IN WHICH THE ELECTRICAL WORK WILL TAKE PLACE NO ALLOWANCES WILL BE MADE SUBSEQUENTLY FOR ANY COSTS WHICH MAY BE INCURRED BECAUSE OF ANY ERROR OR OMISSION DUE TO FAILURE TO EXAMINE THE SITE AND TO NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS AND ACTUAL SITE CONDITIONS.
- 1.08 SUBSTITUTIONS
- A. DURING THE BIDDING PROCESS, THE CONTRACTOR MAY SUBMIT PERTINENT TEST DATA. CATALOG CUTS AND PRODUCT INFORMATION REQUIRED TO SUBSTANTIATE THAT THE PRODUCT IS IN FACT EQUAL. REFER TO GENERAL CONDITIONS AND DIVISION FOR REQUIREMENTS. ONLY ONE SUBSTITUTION WILL BE CONSIDERED FOR EACH PRODUCT SPECIFIED EXCEPT FOR WIRING DEVICES. SUBSTITUTION REQUESTS SHOULD BE SUBMITTED IN A TIMELY FASHION TO ALLOW TIME FOR REVIEW AND PUBLICATION TO ALL CONTRACTORS. SUBSTITUTION REQUESTS WHICH DO NOT ALLOW FOR THE PRECEDING WILL NOT BE CONSIDERED
- 1.09 SUBMITTALS
- A. GENERAL: REFER TO GENERAL CONDITIONS FOR SUBMITTAL PROCEDURES AND REQUIREMENTS.
- B. FORMAT: FURNISH SUBMITTAL DATA NEATLY BOUND IN AN 8-1/2" X 11" FOLDER OR BINDER WITH A TABLE OF CONTENTS LISTING SPECIFICATION SECTION AND PARAGRAPH NUMBER. DRAWINGS REQUIRED TO BE SUBMITTED SHALL BE PREPARED BY COMPETENT DRAFTING PEOPLE ACCORDING TO GENERALLY ACCEPTED DRAFTING PRACTICES. THESE DRAWINGS AND SUBMITTAL DATA ON ALL ELECTRICAL EQUIPMENT (PANELBOARDS. LIGHT FIXTURES, ETC.) SHALL BE MODIFIED, AS NECESSARY, TO BECOME "AS BUILT" DOCUMENTS.
- C. SUBMITTALS SHALL CONSIST OF DETAILED SHOP DRAWINGS, SPECIFICATIONS, "CATALOG CUTS" AND DATA SHEETS CONTAINING PHYSICAL AND DIMENSIONAL INFORMATION, PERFORMANCE DATA, ELECTRICAL CHARACTERISTICS, MATERIALS USED IN FABRICATION MATERIAL FINISH AND SHALL CLEARLY INDICATE THOSE OPTIONAL ACCESSORIES WHICH ARE INCLUDED AND THOSE WHICH ARE EXCLUDED.

E. SUBMIT MANUFACTURER'S DATA FOR:

- 1. LIGHTING FIXTURES.
- WIRING DEVICES AND DEVICE PLATES (ALL TYPES). FIRE ALARM DEVICES.
- 4. TRANSFORMERS.
- DISCONNECT SWITCHES. PANELBOARDS
- MOTOR STARTERS
- 8. METERS

1.10 DRAWINGS

- A. LAYOUT: GENERAL LAYOUT SHOWN ON THE DRAWINGS SHALL BE FOLLOWED EXCEPT WHERE OTHER WORK MAY CONFLICT WITH OTHER EQUIPMENT. IN SUCH CASE, ENGINEER SHOULD BE NOTIFIED.
- B. ACCURACY:
- 1. DRAWINGS FOR THE WORK UNDER THIS SECTION ARE DIAGRAMMATIC.
- 2. CONTRACTOR SHALL VERIFY LINES, LEVELS AND DIMENSIONS SHOWN ON THE DRAWINGS AND SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE SETTING OUT OF WORK AND FOR ITS STRICT CONFORMANCE WITH EXISTING CONDITIONS AT THE SITE.
- 1.11 EQUIPMENT LOCATION
- A. SURFACE MOUNTED PANELS, DEVICES, AND RACEWAY WILL ONLY BE ALLOWED IN MECHANICAL EQUIPMENT AREAS OR WHERE SUCH CONSTRUCTION ALREADY EXISTS.
- 1.12 WORKMANSHIP
- A. PREPARATION, HANDLING AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND TECHNICAL DATA PARTICULAR TO THE PRODUCT SPECIFIED AND/OR ACCEPTED EQUAL EXCEPT AS OTHERWISE SPECIFIED. COORDINATE WORK AND COOPERATE WITH OTHERS IN FURNISHING AND PLACING THIS WORK. REVIEW SHOP DRAWINGS FOR WORK DONE BY OTHER TRADES AND TO FIELD MEASUREMENTS AS NECESSARY TO PROPERLY FIT THE WORK.
- B. CONFORM TO THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION'S "STANDARD OF INSTALLATION" FOR GENERAL INSTALLATION PRACTICE.
- 1.13 SPECIAL TOOLS
- A. ALL SPECIAL TOOLS FOR PROPER OPERATION AND MAINTENANCE OF THE EQUIPMENT PROVIDED UNDER THIS SECTION SHALL BE DELIVERED TO THE OWNER'S REPRESENTATIVE.
- 1.14 PROJECT RECORD DRAWINGS

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A. REFER TO GENERAL CONDITIONS. PROVIDE PROJECT RECORD DRAWINGS. SUCH DRAWINGS SHALL FULLY REPRESENT INSTALLED CONDITIONS, INCLUDING ACTUAL LOCATION OF OUTLETS, TRUE PANELBOARD CONNECTIONS FOLLOWING PHASE BALANCING ROUTINES, CORRECT CONDUIT AND WIRE SIZING AS WELL AS ROUTING, REVISED FIXTURE SCHEDULE LISTING THE MANUFACTURER AND PRODUCTS ACTUALLY INSTALLED AND REVISED PANEL SCHEDULE. CHANGES TO DRAWINGS SHALL BE MADE BY QUALIFIED DRAFTSPERSONS TO MATCH EXISTING LINEWORK AND LETTERING AS CLOSE AS POSSIBLE. CHANGES SHALL BE MADE ON REPRODUCIBLE MYLAR SEPIAS OF ORIGINAL DRAWINGS FURNISHED BY CONTRACTOR. DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL

B. TYPEWRITTEN PANEL SCHEDULES SHALL BE PROVIDED FOR PANELBOARDS INDICATING THE LOADS SERVED AND THE CORRECT BRANCH CIRCUIT NUMBER. SCHEDULES SHALL MATCH THE FORMAT SHOWN ON THE PANEL SCHEDULES CONTAINED ON THE CONTRACT DOCUMENTS.

1.15 CLEANING

A. AFTER OTHER WORK SUCH AS SANDING. PAINTING. ETC. HAS BEEN COMPLETED. CLEAN LIGHTING FIXTURES. PANELBOARDS. SWITCHBOARDS AND OTHER ELECTRICAL EQUIPMENT TO REMOVE DUST, DIRT, GREASE OR OTHER MARKS AND LEAVE WORK IN CLEAN CONDITION.

1.16 VOLTAGE CHECK

A. AT COMPLETION OF JOB, CHECK VOLTAGE AT SEVERAL POINTS OF UTILIZATION ON THE SYSTEM WHICH HAS BEEN INSTALLED UNDER THIS CONTRACT. DURING TEST. ENERGIZE INSTALLED LOADS.

1.17 TESTS

- A. PERFORM TESTS AS SPECIFIED TO PROVE INSTALLATION IS IN ACCORDANCE WITH CONTRACT REQUIREMENTS. TESTS SHALL BE CONDUCTED DURING THE CONSTRUCTION PERIOD AND AT COMPLETION TO DETERMINE CONFORMITY WITH APPLICABLE CODES AND WITH THESE SPECIFICATIONS. TYPED RECORDS OF ALL THE FOLLOWING TESTS SHALL BE INCLUDED IN MAINTENANCE INSTRUCTIONS. TESTS, IN ADDITION TO SPECIFIC SYSTEM TEST DESCRIBED ELSEWHERE, SHALL INCLUDE:
 - CIRCUIT CONTINUITY: TEST FEEDER AND BRANCH CIRCUITS FOR CONTINUITY. TEST NEUTRALS FOR IMPROPER GROUNDS
- EQUIPMENT OPERATIONS: TEST MOTORS FOR CORRECT OPERATION AND ROTATION.
- CIRCUIT NUMBERING VERIFICATION: SELECT ON A RANDOM BASIS, VARIOUS CIRCUIT BREAKERS IN THE PANELBOARDS AND CYCLE THEM ON AND OFF TO VERIFY COMPLIANCE OF THE TYPED PANEL DIRECTORIES WITH ACTUAL FIELD WIRING.
- 4. PRODUCT FAILURE: PRODUCTS WHICH FAIL DURING THE TESTS OR ARE RULED UNSATISFACTORY BY THE ARCHITECT SHALL BE REPLACED, REPAIRED OR CORRECTED AS PRESCRIBED BY THE ARCHITECT AT THE EXPENSE OF THE CONTRACTOR. TESTS SHALL BE PERFORMED AFTER REPAIRS, REPLACEMENTS OR CORRECTIONS UNTIL SATISFACTORY PERFORMANCE IS DEMONSTRATED.
- MISCELLANEOUS: INCLUDE TEST RESULTS IN THE MAINTENANCE MANUAL. COST, IF ANY, FOR ALL TESTS SHALL BE PAID BY THE CONTRACTOR.
- 6. FIRE ALARM AND INTERLOCK SYSTEMS: PRODUCE MALFUNCTION SYMPTOMS IN OPERATING SYSTEMS TO TEST ALARM AND INTERLOCK SYSTEMS. EACH FIRE ALARM SIGNA INITIATING DEVICE, INCLUDING ALL SMOKE DETECTORS, SHALL BE ACTIVATED TO VERIFY PROPER ZONE ANNUNCIATION AND ALARM SIGNAL INTERLOCKS. ACTIVATION OF IONIZATION TYPE SMOKE DETECTORS, BOTH CEILING AND DUCT TYPE, SHALL BE ACCOMPLISHED BY MEANS OF A SMOKE EMITTING DEVICE PER MANUFACTURER'S RECOMMENDATIONS. PHOTOELECTRIC TYPE SHALL BE TESTED BY INTERRUPTING LIGHT BEAM. CORRECT OPERATION OF ALARM CIRCUIT ANNUNCIATION IN THE FIRE ALARM ZONE ANNUNCIATION PANEL SHALL BE VERIFIED. ALL FIRE ALARM DEVICES, BOTH EXISTING AND NEW, INSTALLED ON THE TENANT FLOORS SHALL BE TESTED.
- 7. EMERGENCY LIGHTING AND EXIT LIGHT: CONTRACTOR SHALL TEST IN FIELD AFTER INSTALLATION EACH EMERGENCY LIGHT AND EXIT LIGHT. TEST RESULTS SHALL BE DOCUMENTED IN TYPE WRITTEN REPORT AND SUBMITTED TO ENGINEER.

SECTION 16100 BASIC MATERIALS & METHODS

PART I GENERAL

1.01 DESCRIPTION

- A. GENERAL: WORK SPECIFIED IN THIS SECTION ENCOMPASSES PRODUCTS, ASSEMBLIES AND BASIC INSTALLATION METHODS REQUIRED FOR ELECTRICAL PROJECT SYSTEMS SPECIFIED UNDER THIS SECTION AND INCLUDES, BUT IS NOT LIMITED TO:
 - CONDUIT. RACEWAYS AND FITTINGS.
 - WIRES AND CABLES. WIRE CONNECTIONS AND DEVICES.
 - OUTLET BOXES. PULL AND JUNCTION BOXES.
 - SWITCHES AND RECEPTACLES.
 - DEVICE PLATES.
 - MOTOR STARTERS. DISCONNECT SWITCHES.
- 10. CIRCUIT BREAKERS.
- 11. BRANCH CIRCUIT PANELBOARDS. 12. LOW VOLTAGE DRY-TYPE TRANSFORMERS 13. LIGHTING FIXTURES

PART 2 PRODUCTS

2.01 CONDUIT AND FITTINGS

A. ELECTRICAL METALLIC TUBING:

1. CONDUIT: FORMED OF COLD ROLLED STRIP STEEL, ELECTRICAL RESISTANCE WELDED CONTINUOUSLY ALONG THE LONGITUDINAL SEAM AND HOT-DIP GALVANIZED AFTER FABRICATION. CONFORM TO ANSI C80.3 AND MEET UL REQUIREMENTS.

2. COUPLINGS: STEEL, ZINC PLATED OZ/GEDNEY 5000 SERIES.

B. FLEXIBLE METALLIC CONDUIT: CONDUIT: FABRICATED IN CONTINUOUS LENGTHS FROM GALVANIZED STEEL STRIP, SPIRAL WOUND AND FORMED TO PROVIDE AN INTERLOCKING DESIGN.

FITTINGS: ONE SCREW (USE TWO SCREW WHEN AVAILABLE) DOUBLE CLAMP VARIETY CONNECTORS WITH CAST MALLEABLE IRON BODIES AND THREADED MALE HUBS WITH INSULATED THROATS.

- C. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT:
- 1. CONDUIT: ANACONDA TYPE UA, COLEMAN TYPE UXT1.
- FITTINGS: CONNECTOR BODY AND GLAN NUT SHALL BE OF CADMIUM PLATED CAST MALLEABLE IRON. WITH TAPERED MALE THREADED HUB; INSULATED THROAT AND NEOPRENE "O" RING GASKET RECESSED INTO THE FACE OF THE STOP NUT. THE CLAMPING GLAND SHALL BE OF MOLDED NYLON WITH AN INTEGRAL BRASS PUSH-IN FERRULE.
- 2.02 WIRES AND CABLES

A. GENERAL:

- APPROVED MANUFACTURERS: AMERICAN INSULATED WIRE. SOUTHWIRE. ROME CABLE. OR TRIANGLE
- 2. CONDUCTOR MATERIAL: ALL WIRE AND CABLE SHOWN ON THE DRAWINGS IS INSULATED COPPER CONDUCTOR UNLESS OTHERWISE NOTED
- MINIMUM CONDUCTOR SIZE: AWG NO. 12 FOR POWER AND LIGHTING BRANCH CIRCUITS. ALL BRANCH CIRCUITS EXCEEDING 100' SHALL UTILIZE #10 MINIMUM CONDUCTOR. AWG NO. 14 FOR SIGNAL AND CONTROL CIRCUITS UNLESS OTHERWISE NOTED ON THE DRAWINGS OR SPECIFIED HEREIN.
- 4. COLOR CODING: COLOR CODING SHALL CONFORM TO ALL LOCAL AND GOVERNING CODES, RULES AND REGULATIONS. SYSTEM CONDUCTORS SHALL BE IDENTIFIED AS TO VOLTAGE AND PHASE CONNECTIONS BY MEANS OF COLOR IMPREGNATED INSULATION OR APPROVED COLOR MARKING TAPE AS FOLLOWS:

A. FOR 120/208 VOLT. 3 PHASE, 4 WIRE SYSTEMS:

PHASE A – BLACK
PHASE B – RED
PHASE C – BLUE
NEUTRAL – WHITE
GROUND – GREEN
ISOLATED GROUND –
GREEN WITH A YELLOW TRAVELER

B. FOR 277/480 VOLT. 3 PHASE, 4 WIRE SYSTEMS: PHASE A - BROWN

PHASE B – ORANGE PHASE C - YELLOW NEUTRAL – GRAY

GROUND - GREEN

- B. SECONDARY WIRE, 0 TO 600 VOLTS:
- 1. NEC TYPE THHN FOR FEEDERS AND BRANCH CIRCUITS IN DRY LOCATIONS. THWN IN WET LOCATIONS.
- 2. NEC TYPE THHN FOR WIRE INSTALLED IN FIXTURE RACEWAYS AND USED AS BRANCH CIRCUIT FEEDERS IN DRY LOCATIONS.

2.03 WIRE CONNECTIONS AND DEVICES

- A. WIRE JOINTS: WIRES IN SIZES FROM NO. 18 TO NO. 8 AWG, SOLID OR STRANDED CONDUCTOR, WITH INSULATION RATED 105°C. OR LESS SHALL BE JOINED WITH ELECTRICAL SPRING CONNECTORS OF THREE-PART CONSTRUCTION INCORPORATING A NON-RESTRICTED. ZINC COATED STEEL SPRING ENCLOSED IN A STEEL SHELL WITH AN OUTER JACKET OF VINYL PLASTIC WITH A FLEXIBLE INSULATING SKIRT.
- B. MECHANICAL COMPRESSION CONNECTORS AND TAPS: STRANDED CONDUCTORS FROM NO. 6 AWG TO 750 MCM SHALL BE JOINED OR TAPPED USING BOLTED PRESSURE CONNECTORS HAVING CAST BRONZE COMPRESSION BOLTS. FITTINGS SHALL BE WIDE RANGE-TAKING AND DESIGNED TO FACILITATE THE MAKING OF PARALLEL TAPS, TEES, CROSSES OR END-TO-END CONNECTIONS.
- C. FIXTURE CONNECTIONS: SPLICE FIXTURE WIRE TO CIRCUIT WIRING WITH SOLDERLESS CONNECTORS IN ACCORDANCE WITH PARAGRAPH A, PART 2, 2.03.
- D. TERMINATING LUGS: CONDUCTORS FROM SIZE NO. 6 AWG TO 750 MCM, COPPER, SHALL BE TERMINATED USING TIN PLATED COPPER COMPRESSION LUGS ATTACHED WITH HAND OR HYDRAULICALLY OPERATED CRIMPING TOOLS AND DIES AS STIPULATED BY THE LUG MANUFACTURER. LUGS SHALL BE 3M "SCOTCHLOK" SERIES 30014, BURNDY TYPE Y-AL SERIES.
- E. SPLICING AND INSULATING TAPE (600 VOLTS AND BELOW): GENERAL PURPOSE ELECTRICAL TAPE SHALL BE SUITABLE FOR TEMPERATURES FROM MINIMUM 18°C. 105°C., SHALL BE BLACK, ULTRAVIOLET PROOF. SELF-EXTINGUISHING. 7 MIL THICK WITH A DIELECTRIC STRENGTH OF 10,000 VOLTS.
- F. INSULATING PUTTY (600 VOLTS AND BELOW): PADS OR ROLLS OF NON CORROSIVE. SELF-FUSING, 1/8 INCH THICK RUBBER PUTTY WITH PVC BACKING SHEET. PUTTY SHALL BE SUITABLE FOR TEMPERATURES FROM MINUS 17.8°C. TO 80°C. AND SHALL HAVE A DIELECTRIC STRENGTH OF 570 VOLTS/MIL MINIMUM.
- G. INSULATING RESIN: TWO-PART LIQUID EPOXY RESIN WITH RESIN AND CATALYST IN PREMEASURED, SEALED MIXING POUCH. RESIN SHALL HAVE A SETUP TIME OF APPROXIMATELY 30 MINUTES AT 21.1°C. AND SHALL HAVE THERMAL AND DIELECTRIC PROPERTIES EQUAL TO THE INSULATION PROPERTIES OF THE CABLES IMMERSED IN THE RESIN.
- H. TERMINAL STRIP CONNECTORS: TERMINATE WIRE IN LOCKING TONGUE STYLE. PRESSURE TYPE. SOLDERLESS LUG WHERE

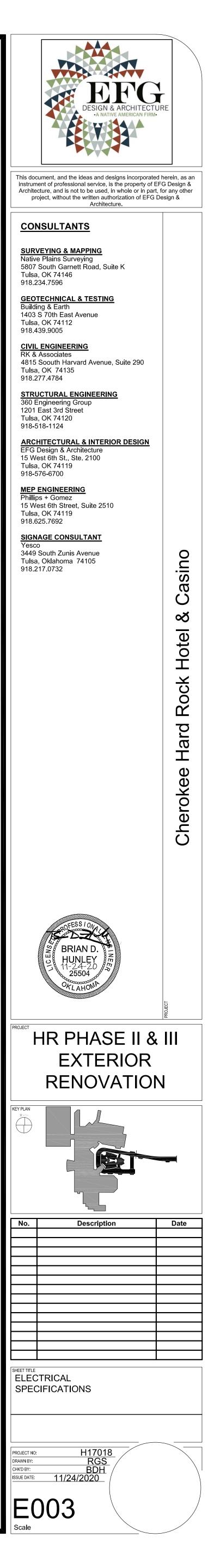
SET	SCREW	COUPLINGS.

- 2.04 OUTLET BOXES A. STANDARD OUTLET BOXES: GALVANIZED, ONE-PIECE, DIE FORMED OR DRAWN STEEL, KNOCK-OUT TYPE OF SIZE AND CONFIGURATION BEST SUITED TO THE APPLICATION INDICATED ON THE PLANS. MINIMUM BOX SIZE, 2 INCH IN WIDTH, 3-1/2 INCH IN HEIGHT AND
- B. CONCRETE RINGS: GALVANIZED STEEL, 4 INCH OCTAGON RINGS WITH MOUNTING LUGS. BACKPLATE AND ADAPTER RING AS REQUIRED. SELECT HEIGHT AS NECESSARY TO POSITION KNOCKOUTS ABOVE CONCRETE REINFORCING STEEL
- C. SWITCH BOXES: 2 INCH WIDE BY 3 INCH LONG GALVANIZED STEEL SWITCH BOXES USED FOR THE INSTALLATION OF SINGLE SWITCHES INSTALL MULTIPLE SWITCHES IN STANDARD GANG BOXES WITH RAISED DEVICE COVERS SUITABLE FOR THE APPLICATION INDICATED.
- D. TILE BOXES: OUTLET BOXES INSTALLED IN TILE; STEEL CITY GW SERIES, APPLETON M SERIES. STANDARD OUTLET BOXES WITH RAISED, SQUARE CORNERED, DEVICE COVERS ARE ACCEPTABLE.
- E. CAST METAL OUTLET BOXES: 4 INCH, CAST IRON ALLOY WITH THREADED HUBS AND MOUNTING LUGS AS REQUIRED. BOXES SHALL BE FURNISHED WITH CAST COVER PLATES OF THE SAME MATERIAL AS THE BOX AND NEOPRENE COVER GASKETS. CROUSE-HINDS FS AND FD SERIES. APPLETON JBX SERIES
- 2.05 PULL AND JUNCTION BOXES

APPLICABLE.

2-1/2 INCH IN DEPTH.

- A. SHEET METAL BOXES: USE STANDARD OUTLET OR CONCRETE RING BOXES WHEREVER POSSIBLE, OTHERWISE USE MINIMUM 16 GAUGE GALVANIZED SHEET METAL. NEMA 1 BOXES, SIZED TO CODE REQUIREMENTS WITH COVERS SECURED BY CADMIUM PLATED MACHINE SCREWS LOCATED 6 INCHES ON CENTERS. CIRCLE AW PRODUCTS, HOFFMAN ENGINEERING COMPANY.
- B. CAST METAL BOXES: USE STANDARD CAST MALLEABLE IRON OUTLET OR DEVICE BOXES WHEREVER POSSIBLE; OTHERWISE USE CADMIUM PLATED, CAST MALLEABLE IRON JUNCTION BOXES WITH BOLT-ON, INTERCHANGEABLE CONDUIT HUB PLATES WITH NEOPRENE GASKETS. CROUSE HINDS SIDEWALK BOXES, TYPE WJBF OR APPLETON RS SERIES.
- 2.06 RECEPTACLES AND SWITCHES
- A. GENERAL:
- 1. ALL GENERAL PURPOSE 20 AMPERE, 125/250 VOLT RECEPTACLES AND 120/277 VOLT SWITCHES (NEMA WD-1).
- 2. UNLESS OTHERWISE NOTED BY THE ARCHITECT, THE COLOR OF ALL DEVICES SHALL BE IVORY EXCEPT DEDICATED COMPUTER (ISOLATED GROUND) RECEPTACLES SHALL BE IVORY WITH AN ORANGE TRIANGLE.
- 3. UNLESS OTHERWISE NOTED BY THE ARCHITECT, THE FINISH OF ALL DEVISE PLATES SHALL BE IVORY.
- B. RECEPTACLES, NEMA 5-20R, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE, GROUNDING TYPE:
- 1. GENERAL PURPOSE SINGLE OUTLET SELF-GROUNDING, SIDE WIRED, WITH BINDING HEAD STAKED TERMINAL SCREW. LEVITON 5351 OR EQUAL BY GENERAL ELECTRIC. PASS AND SEYMOUR. HUBBELL
- 2. GENERAL PURPOSE DUPLEX RECEPTACLES SELF-GROUNDING SIDE WIRED, WITH BINDING HEAD STAKED TERMINAL SCREWS AND BREAK-OFF STRIP FOR TWO CIRCUIT WIRING. LEVITON 5342 OR EQUAL BY GENERAL ELECTRIC, PASS AND SEYMOUR, HUBBELL.
- 3. ISOLATED GROUND DUPLEX RECEPTACLES SELF-GROUNDING SIDE WIRED WITH BINDING HEAD STAKED TERMINAL SCREWS. LEVITON 5362-IG-I OR EQUAL BY GENERAL ELECTRIC, PASS AND SEYMOUR. HUBBELL.
- 4. CLOCK RECEPTACLE/HANGER, SIDE WIRED WITH BINDING HEAD STAKED TERMINAL SCREWS. LEVITON 628-1 OR EQUAL BY GENERAL ELECTRIC, PASS AND SEYMOUR, HUBBELL
- C. LIGHT SWITCHES: TWENTY AMPERE 120/277 VOLT, FAST MAKE-FAST BREAK, QUIET TYPE SWITCH WITH SILVER CADMIUM ALLOY CONTACTS, BINDING HEAD TERMINAL SCREWS, SIDE WIRED
- 1. SINGLE-POLE, SINGLE-THROW: LEVITON 1121 SERIES OR EQUAL BY GENERAL ELECTRIC, PASS AND SEYMOUR, HUBBELL
- 2. DOUBLE-POLE, SINGLE-THROW: LEVITON OR EQUAL BY GENERAL ELECTRIC, PASS AND SEYMOUR, HUBBELL. MATCH ITEM 1 STYLE.
- 3. THREE-WAY: LEVITON OR EQUAL BY GENERAL ELECTRIC, PASS AND SEYMOUR. HUBBELL. MATCH ITEM 1 STYLE.
- D. DIMMER(S) SHALL BE LUTRON NOVA T SERIES, SIZE AND DERATE IN ACCORDANCE WITH LUTRON'S RECOMMENDATIONS. SWITCHES AT DIMMER LOCATIONS SHALL BE LUTRON NOVA T SERIES. AT LOCATIONS WHERE BOTH DIMMER CONTROLS AND SWITCHES ARE SHOWN CONTRACTOR SHALL FURNISH AND INSTALL ONE-PIECE MULTIGANG FACEPLATE WHICH SHALL INCLUDE DIMMERS AND SWITCHES. UNLESS OTHERWISE NOTED BY THE ARCHITECT, THE COLOR OF ALL DIMMERS AND FACEPLATES SHALL BE IVORY.
- E. MOTOR RATED SWITCHES: FRACTIONAL HORSEPOWER MANUAL STARTERS WITH MELTING ALLOY TYPE THERMAL OVERLOAD RELAY, PILOT LIGHT AND LOCK-OFF/HANDLE GUARD. 1 OR 2 POLE, 115/230 VOLT, SQUARE D, CLASS 2510.
- 2.07 DEVICE PLATES
- A. GENERAL:
- 1. FURNISH DEVICE PLATES FOR SWITCHES AND RECEPTACLES. DEVICE PLATE COLOR AND MATERIAL SHALL BE SELECTED BY ARCHITECT AT SUBMITTAL TIME REGARDLESS OF WHAT IS SPECIFIED BELOW.
- 2. PLATES: SMOOTH AND FREE OF GROOVES, EMBOSSING OR OTHER EMBELLISHMENT.
- 3. MOUNTING SCREWS: MATCH PLATE FINISH.
- 4. MARKER PLATES: PERMANENTLY ENGRAVED WITH 1/8 INCH HIGH PAINT FILLED LETTERS, UNLESS OTHERWISE NOTED.

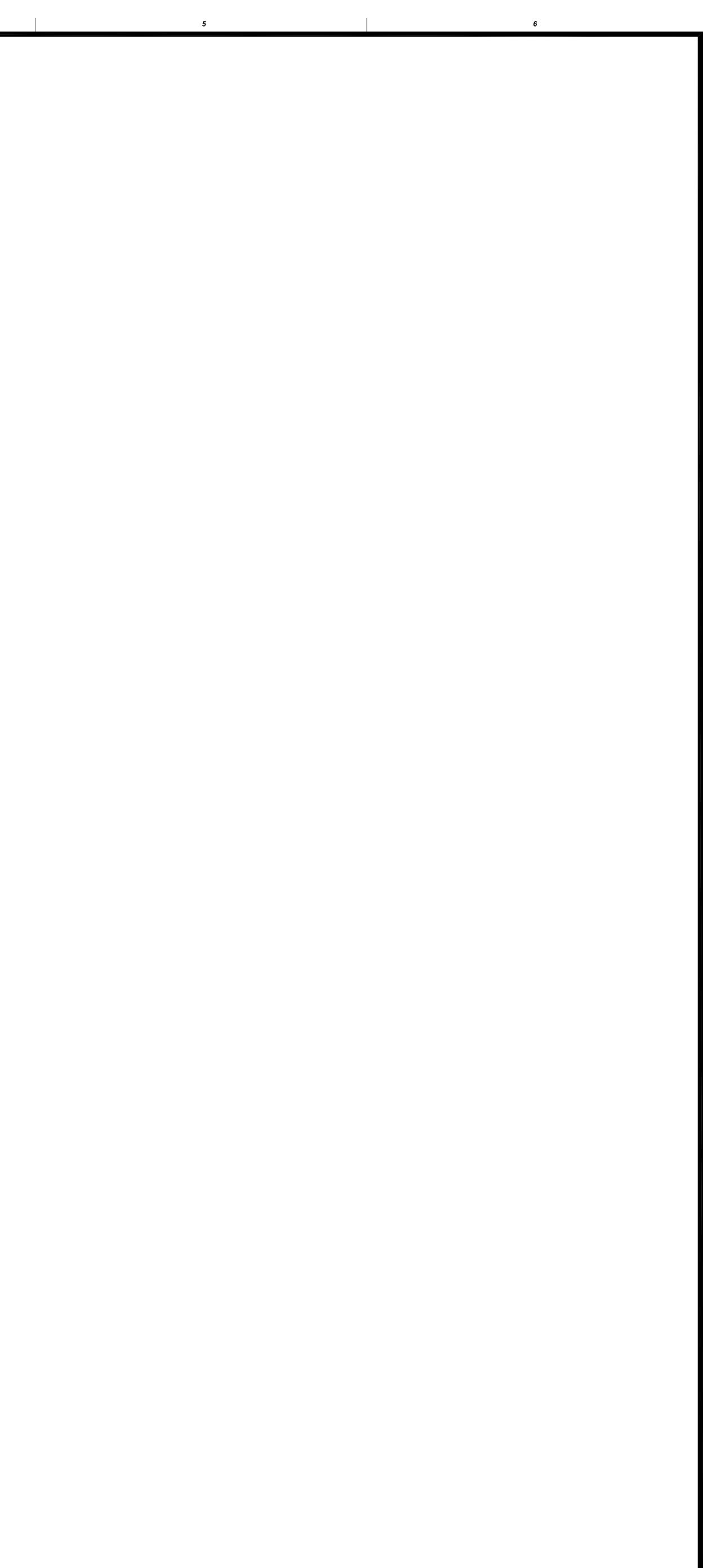


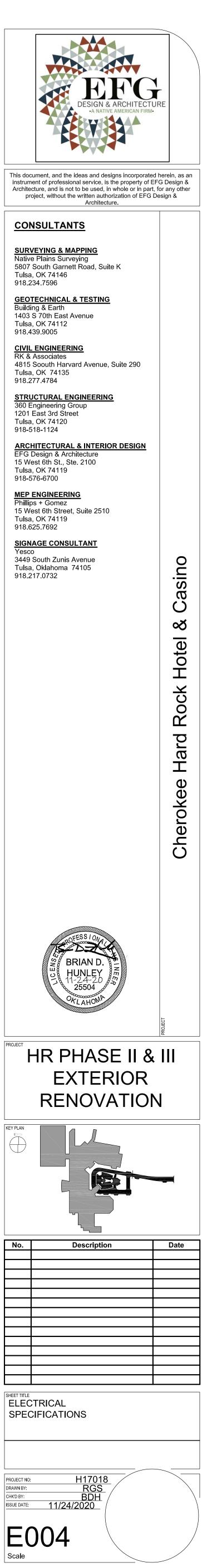
- B. PLASTIC DEVICE PLATES: SOLID .100" THICK WITH OPENINGS TO ACCOMMODATE DEVICES INDICATED ON THE DRAWINGS. LEVITON, PASS AND SEYMOUR, HUBBELL.
- C. STAINLESS STEEL DEVICE PLATES: SOLID 0.032" THICK TYPE 430 WITH OPENINGS TO ACCOMMODATE DEVICES INDICATED ON THE DRAWINGS. LEVITON, PASS AND SEYMOUR, HUBBELL
- 2.08 MOTOR STARTERS
- A. FULL VOLTAGE STARTERS: ACROSS-THE-LINE. MAGNETIC TYPE. DOUBLE-BREAK SILVER ALLOY CONTACTS, GRAVITY DROP-OUT, MOLDED OPERATING COIL AND MELTING ALLOY THERMAL OVERLOAD RELAYS ON PHASE CONDUCTORS. 120V CONTROL WITH TRANSFORMER. SIZE: O MINIMUM. ALL LINE AND LOAD TERMINALS OF THE DEVICE RATED 100 AMPERES OR LESS SHALL BE RATED FOR 75°C.
- B. OVERLOAD RELAYS AND THERMAL UNITS:
- 1. ELEMENTS FOR 100% FULL LOAD CURRENT FOR 55°C. RISE MOTORS OR 115% FULL LOAD CURRENT FOR 40°C. RISE MOTORS AND SHALL BE AMBIENT COMPENSATED.
- 2. IF THE OVERLOAD ELEMENTS ARE OF THE WRONG SIZE FOR THE NAMEPLATE RATING OF THE MOTOR, REPLACE WITH ELEMENTS OF THE CORRECT SIZE.
- 2.09 FIRE RATED POKE THROUGH
- A. SERVICE FITTING: CAST ALUMINUM HOUSING WITH FINISH SELECTED BY ARCHITECT. REFER TO 2.06 FOR RECEPTACLE SPECIFICATION. PROVIDE COMPLETE BARRIER BETWEEN LOW TENSION AND 120 VAC SERVICE. SUBMIT TO ENGINEER PRIOR TO INSTALLATION.
- 2.10 SEPARATELY ENCLOSED COMBINATION STARTERS
- A. MEET THE REQUIREMENTS OF MOTOR STARTERS. IN ADDITION, STARTER AND FUSED DISCONNECT DEVICE SHALL BE HOUSED TOGETHER IN ENCLOSURE OF REQUIRED TYPE MEETING OR EXCEEDING NEMA STANDARDS. GREEN "RUNNING" INDICATING LAMP WITH PUSH TO TEST FEATURE. HAND/OFF/AUTO CONTROL SWITCH ON COVER. 120 VOLT CONTROL VOLTAGE. NEMA 1 FOR INDOORS AND NEMA 3R FOR OUTDOORS OR AS SHOWN ON DRAWINGS. ALL LINE AND LOAD TERMINALS OF THE DEVICE RATED 100 AMPERES OR LESS SHALL BE RATED FOR 75°C.
- 2.11 DISCONNECT SWITCHES
- A. SWITCH INTERIOR: DEAD-FRONT CONSTRUCTION WITH HINGED ARC SUPPRESSER AND SWITCH BLADES WHICH ARE FULLY VISIBLE IN THE "OFF" POSITION AND WITH DOOR OPEN.
- B. SWITCH MECHANISM: QUICK-MAKE AND QUICK-BREAK OPERATING HANDLE AND MECHANISM WITH A DELETE DUAL COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE "ON" POSITION OR CLOSING THE SWITCH MECHANISM WHILE THE DOOR IS OPEN. AN ELECTRICAL INTERLOCK SWITCH SHALL BE PROVIDED TO DEGENERIZE CONTROL WIRING AS REQUIRED. ALL LINE AND LOAD TERMINALS OF THE DEVICE RATED 100 AMPERES OR LESS SHALL BE RATED FOR 75°C.
- C. RATINGS: SWITCHES HORSEPOWER RATED FOR 600 VOLTS. 60 HZ AND WHERE INDICATED TO BE FUSED SHALL HAVE PROVISIONS FOR FUSES.
- D. ENCLOSURES: NEMA 1, CODE GAUGE SHEET STEEL WITH HINGED COVER, UNLESS USED WHERE EXPOSED TO THE WEATHER, IN WHICH CASE, USE NEMA 3R.
- 2.12 PROTECTIVE DEVICES
- A. FUSED SWITCHES:
- 1. GENERAL: FUSED SWITCHES FOR SIZES 30 AMP THROUGH 1200 AMP.
- 2. FUSIBLE SWITCHES: QUICK-MAKE, QUICK-BREAK OF THE SIZES SHOWN ON THE DRAWINGS. APPROVED BY UNDERWRITER'S LABORATORIES AND, WHERE APPLICABLE, DUAL HORSEPOWER RATED FOR BOTH STANDARD ONE-TIME OR DUAL ELEMENT FUSES. ALL LINE AND LOAD TERMINALS OF THE DEVICE RATED 100 AMPERES OR LESS SHALL BE RATED FOR 75°C.
- UNITS PADLOCKING: IN THE "OFF" POSITION AND THE OPERATING HANDLING POSITION SHALL GIVE POSITIVE SWITCH INDICATION, I.E., HORIZONTAL "OFF". DIAGONAL "ON". SWITCHES SHALL PASS INDUSTRY STANDARD I-SQUARED-T WITHSTANDABILITY TEST AND FUSE RACE TEST.
- B. CIRCUIT BREAKERS:
- 1. CIRCUIT BREAKERS: INTERRUPTING CAPACITY AS NOTED ON THE DRAWINGS AND IF NOT SHOWN, BREAKERS FOR 208 VOLT SYSTEM SHALL HAVE INTERRUPTING CAPACITY OF NOT LESS THAN 10,000 AMPS. CIRCUIT BREAKERS FOR 480 VOLT SYSTEM SHALL HAVE A MINIMUM INTERRUPTING RATING OF 18,000 AMPS. CIRCUIT BREAKERS MOLDED CASE, TRIP INDICATING, THERMAL MAGNETIC TYPE, 40°C., AMBIENT TEMPERATURE COMPENSATED 40°C. RATED OR AMBIEN COMPENSATED. ALL LINE AND LOAD TERMINALS OF THE DEVICE RATED 100 AMPERES OR LESS SHALL BE RATED FOR 75**°**C.
- 2. FACTORY CERTIFICATION OF TRIP CHARACTERISTICS PROVIDED WITH THE SUBMITTALS FOR EVERY CIRCUIT BREAKER.
- 3. COVERS: SEALED ON NON-INTERCHANGEABLE TRIP BREAKERS AND TRIP UNIT COVERS SEALED ON INTERCHANGEABLE TRIP BREAKERS TO PREVENT TAMPERING. BREAKER CIRCUIT RATINGS CLEARLY VISIBLE AFTER INSTALLATION OR ENGRAVED NAMEPLATES STATING THE RATING. FERROUS PARTS PLATED TO MINIMIZE CORROSION.
- 4. BREAKERS: BOLT ON, 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 OPERATING HANDLES MOVING TO A CENTER POSITION.
- MAGNETIC TRIP ELEMENT: EACH POLE BEING INDIVIDUALLY CALIBRATED. MULTIPLE BREAKERS SHALL HAVE A SINGLE HANDLE TO OPEN AND CLOSE CONTACT SIMULTANEOUSLY IN BOTH MANUAL OPERATING AND UNDER AUTOMATIC TRIPPING. INTERPOLE BARRIERS SHALL BE PROVIDED INSIDE THE BREAKER TO PREVENT ANY PHASE-TO-PHASE FLASHOVER. EACH POLE OF THE BREAKERS SHALL HAVE ADEQUATE

MEANS OF ARC EXTINCTION.

- 6. CIRCUIT BREAKERS OF STANDARD RATINGS: LABORATORIES, INC. LABEL AND NATIONAL MANUFACTURERS ASSOCIATION PUBLICATION
- 7. ALL 20 AMP CIRCUIT BREAKERS SHALL BE FREQUENT SWITCHING, SWD RATING.
- C. FUSES, UNLESS OTHERWISE NOTED ON THE DRAW 1. MOTOR CIRCUITS, FEEDERS AND FEEDERS F
- BREAKER PANEL BOARDS DUAL ELEMENT AMPS, BUSSMAN LOW-PEAK (LPN-RK, LPS-RK-1.
- 2.13 ELECTRICAL SUPPORTING DEVICES
- A. CONCRETE FASTENERS: PHILLIPS "RED-HEAD". CONCRETE PIN FASTENERS, LOW VELOCITY TYPE FASTENERS SHALL BE REMINGTON, RAMSET OR H DRIVEN CONCRETE PIN FASTENERS, LOW VELOCIT
- B. CONDUIT STRAPS: HOT-DIP GALVANIZED, CAST ONE HOLE TYPE STRAP WITH CAST CLAMP-BACK AS REQUIRED. OZ/GEDNEY NO. 14-50G STRAP SPACER; EFCOR NO. 23L STRAP AND NO. 131 S
- C. CONCRETE INSERTS: PRESSED GALVANIZED STEE WITH OVAL SLOT CAPABLE OF ACCEPTING SUPPO INCH TO 1/2 INCH DIAMETER THREAD. UNISTRU SERIES, GLOBE-STRUT CSI SERIES.
- D. CONSTRUCTION CHANNEL: 1 5/8 INCH BY 1 5/ GALVANIZED STEEL CHANNEL WITH 17/32 INCH HOLES, 1-1/2 INCH ON CENTER, IN THE BASE (KINDORF 905 SERIES, UNISTRUT P-1000-HS.
- E. CABLE TIES AND CLAMPS: THOMAS AND BETTS PANDUIT "PAN-TY", ONE-PIECE, NYLON, REUSAB TIES.
- F. FASTENERS (GENERAL): WOOD SCREWS FOR FAS MACHINE SCREWS FOR FASTENING TO STEEL. FASTENING TO GYPSUM BOARD OF PLASTER WAL ANCHORS FOR ATTACHMENTS TO PREPOURED CC
- 2.14 FIRE ALARM SYSTEM
- A. ALL FIRE ALARM SYSTEM COMPONENTS SHALL BE UNLESS OTHERWISE NOTED.
- 2.15.1 BRANCH CIRCUIT PANELBOARDS
- A. MANUFACTURE SHALL BE CUTLER-HAMMER, SQU/ ELECTRIC, CHALLENGER OR ITE SIEMENS.
- B. CONSTRUCTION: CABINETS SHALL BE PROVIDED LEVELED, STEEL DOORS AND TRIM OF CODE THIC WITH CONCEALED BUTT HINGES. PROVIDE COMBI CATCH AND LOCK ON INSIDE EDGE OF DOOR TRI FITTING JOINT BETWEEN DOOR AND TRIM. LOCKS PANELBOARDS SHALL BE KEYED ALIKE.
- C. BUS ASSEMBLY:
- 1. BUS SHALL BE PLATED ALUMINUM WITH TAF "DISTRIBUTED PHASE" CONNECTIONS TO BRA BREAKERS.
- 2. SPACE CONNECTORS SHALL BE DRILLED AND BOLT ON CIRCUIT BREAKER CONNECTIONS. DOUBLE ROW PLACEMENT OF BREAKERS AN PERMIT REMOVAL OR ADDITION OF PROTECT WITHOUT DISTURBING ADJACENT BREAKERS MAIN BUS CONNECTIONS.
- D. FINISH: FIVE-STEP ZINC PHOSPATIZING PRE-TRI COAT RUST INHIBITING DICHROMATE PRIMER, ONE ENAMEL.
- E. TERMINAL LUGS: APPROVED FOR USE WITH COP
- F. MISCELLANEOUS REQUIREMENTS:
- 1. CIRCUIT NUMBERING: STARTING AT THE TO CIRCUITS IN SEQUENCE DOWN THE LEFT HAN NUMBERED CIRCUITS DOWN THE RIGHT HANI
- 2. DIRECTORIES: A CIRCUIT DIRECTORY FRAME CLEAR PLASTIC COVERING SHALL BE PROVID PANEL DOOR.
- 3. EQUIPMENT GROUND BUS: PROVIDE A SEPA GROUNDING BUS.
- 4. REFER TO PANEL SCHEDULES AND ELECTRIC THE FOLLOWING:
- A. SERVICE VOLTAGE. B. TERMINAL LUG SIZE, LOCATION AND QUANTITY. (SPECIFIED, USE ARRANGEMENT COMPATIBLE WITH WIRING.)
- C. BUS AMPACITY.
- D. INTERRUPTING CAPACITY OF BUS AND BREAKERS RATING SPECIFIED IN SECTION 16100 WHEN NOT SCHEDULE).
- E. QUANTITY, POLES AND RATING OF PROTECTIVE D 2.16 LOW VOLTAGE K-RATED DRY-TYPE TRANSFORMER
- A. SHALL HAVE THE FOLLOWING FEATURES:
 - 1. SELF-COOLED BY NATURAL CONVECTION, ISOLATING WINDINGS, INDOOR, DRY TYPE APPROVED BY THE UL. AUTOTRANSFORMERS WILL NOT BE ACCEPTED.
 - 2. RATINGS AND WINDING CONNECTIONS SHALL BE AS INDICATED ON THE DRAWINGS. UNLESS OTHER SPECIFIED TRANSFORMERS SHALL BE 480-208Y/120V, DELTA CONNNECTED PRIMARY AND WYE CONNECTED SECONDARY.
 - 3. RATINGS INDICATED ARE FOR CONTINUOUS DUTY WITHOUT THE USE OF COOLING FANS.
 - 4. TEMPERATURE RISE SHALL NOT EXCEED 150°C WITH LIMITING TEMPERATURE IN ACCORDANCE WITH NEMA STANDARDS.
 - 5. CORE AND COIL ASSEMBLIES:

	3
	A. RIGIDLY BRACED TO WITHSTAND THE STRESSES CAUSED BY SHORT CIRCUIT CURRENTS AND ROUGH HANDLING DURING SHIPPING.
E: UNDERWRITER'S ELECTRIC N AB-1-1975. RATED FOR	B. CORES SHALL BE COMMON CORE CONSTRUCTION HAVING LOW HYSTERISIS AND EDDY CURRENT LOSSES. CORE FLUX DENSITY SHALL BE BELOW SATURATION PINT AT RATED HARMONIC AND 60 HERTZ LOADS.
WINGS:	C. COILS SHALL BE CONTINUOUS WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS.
FOR CIRCUIT T FUSES: 0-600	D. COIL LOSS AND CORE LOSS SHALL BE OPTIMUM FOR EFFICIENT OPERATION.
S–RK), CLASS	E. PRIMARY, SECONDARY AND TAP CONNECTIONS SHALL BE BRAZED OR PRESSURE TYPE.
POWER DRIVEN	B. SOUND LEVELS SHALL NOT EXCEED THE FOLLOWING MAXIMUM LEVELS IN ACCORDANCE WITH NEMA STANDARDS:
E. POWER DRIVEN HILTI POWER TY TYPE.	1. 25–50 KVA, 45 DB 2. 51–150 KVA, 50 DB 3. 151–300 KVA, 55 DB
T MALLEABLE IRON, CKS AND SPACERS ? AND NO. 141G	C. IMPEDANCE SHALL CONFORM TO NEMA STANDARDS WITH A MINIMUM OF 3.2 PERCENT AND MAXIMUM OF 5.2 PERCENT.
SPACER. EEL, SPOT INSERT	D. CORE ASSEMBLIES SHALL BE GROUNDED TO THEIR ENCLOSURES BY ADEQUATE, FLEXIBLE, GROUND STRAPS.
PORT NUTS OF 1/4 UT NO. M2506	E. ENCLOSURES:
/8 INCH 12 GAUGE DIAMETER BOLT	 NOT LESS THAN CODE GAUGE STEEL. TEMPERATURE RISE AT HOTTEST SPOT SHALL CONFORM TO
OF THE CHANNEL.	NEMA STANDARDS.
S CO. "TY–RAPS" BLE TYPE LASHING	3. VENTILATION OPENINGS SHALL PREVENT ACCIDENTAL ACCESS TO LIVE COMPONENTS.
ASTENING TO WOOD.	4. THOROUGHLY CLEAN AND PAINT AT THE FACTORY WITH PRIMER AND MANUFACTURER'S STANDARD FINISH.
TOGGLE BOLTS FOR ALLS. EXPANSION CONCRETE.	DIAGRAM AND SOUND LEVEL INDICATED.
BE BASE BUILDING	G. DIMENSIONS AND CONFIGURATIONS SHALL CONFORM TO THE SPACES DESIGNATED FOR THEIR INSTALLATIONS.
	H. THE NEUTRAL BUS SHALL BE SIZED AND CONFIGURED FOR A MINIMUM CAPACITY OF 200% OF THE FULL LOAD CURRENT.
UARE D, GENERAL	I. FULL CAPACITY TAPS SHALL BE PROVIDED ON THE PRIMARY SIDE OF THE TRANSFORMER HAVING TWO 2.5% ABOVE NORMAL AND FOUR 2.5% BELOW NORMAL.
D WITH STRETCHER ICKNESS, COMPLETE BINATION SPRING	J. TRANSFORMER SHALL BE UL LISTED FOR THE REQUIRED K RATING. K. TRANSFORMER SHALL INCORPORATE AN ELECTROSTATIC SHIELD
RIMS WITH FLUSH (S ON ALL	GROUNDED TO THE TRANSFORMER CORE FOR ATTENUATION OF SPIKES, LINE NOISE AND TRANSIENTS.
APS ARRANGED FOR RANCH CIRCUIT	L. USE PEABODY ISOLATION HANGERS MODEL SFH AT ALL-THREADS FOR SUSPENDED TRANSFORMERS WITH PEABODY MODEL NGD ISOLATION PADS BETWEEN TRANSFORMER AND ITS SUPPORTING STRUCTURE. USE PEABODY MODEL RD ISOLATION PADS FOR FLOOR MOUNTED TRANSFORMERS.
ND TAPPED FOR ARRANGED FOR ND DESIGNED TO CTIVE DEVICES S OR REMOVING	M. MANUFACTURER: CUTLER-HAMMER/WESTINGHOUSE, SQUARE D, GENERAL ELECTRIC, CHALLENGER, OLSUN OR ITE SIEMENS.
REATMENT, ONE IE COAT BAKED-ON	
PPER CONDUCTORS.	
OP, ODD NUMBERED AND SIDE AND EVEN ND SIDE.	
IE AND CARD WITH IDED INSIDE THE	
PARATE EQUIPMENT	
ICAL DRAWINGS FOR	
(WHERE NOT H EXTERNAL	
S. (USE BREAKER SPECIFIED ON	
DEVICES.	





SEC	TION 270500 - VOICE AND DATA COMMUNICATION		a. ANSI/TIA-568-C.0 GENERIC TELECOMM
PAR	T 1 – GENERAL		CUSTOMER PREMISES b. ANSI/TIA-568-C.1 COMMERCIAL BUILD
1.1	SUMMARY		CABLING STANDARD
A.	SECTION DESCRIBES THE PRODUCTS AND EXECUTION REQUIREMENTS RELATING TO FURNISHINGS AND INSTALLATION OF HORIZONTAL CABLING, COPPER AND FIBER BACKBONES ALONG WITH RELATED SUB-SYSTEMS AS PART OF A STRUCTURED CABLING SYSTEM ARE COVERED UNDER THIS DOCUMENT.		 ANSI/TIA-568-C.2 BALANCED TWISTEE TELECOMMUNICATION CABLING AND COMPOR ANSI/TIA-568-C.3 OPTICAL FIBER CAI STANDARD
В.	PRODUCT SPECIFICATIONS, GENERAL DESIGN CONSIDERATIONS, AND INSTALLATION GUIDELINES ARE PROVIDED IN THIS DOCUMENT. QUANTITIES FOR ALL STRUCTURED CABLING PRODUCTS SHALL BE PROVIDED AS REQUIRED TO COMPLETE THE HORIZONTAL CABLING FOR ALL WORK		e. TIA-569-B COMMERCIAL BUILDING STA TELECOMMUNICATIONS PATHWAYS AND SPA
C.	STATIONS AS SHOWN ON FLOOR PLANS. THIS SECTION DESCRIBES THE PRODUCTS AND EXECUTION REQUIREMENTS		f. ANSI-J-STD-607-B COMMERCIAL BUII (EARTHING) AND BONDING REQUIREMENTS
0.	RELATING TO FURNISHING AND INSTALLATION OF TELECOMMUNICATIONS CABLING AND TERMINATION COMPONENTS AND WORK ALSO INCLUDES REMOVAL AND RECYCLING OF UNUSED, UNDOCUMENTED AND OTHERWISE "ABANDONED" CABLES AS IDENTIFIED IN PART 3 OF THIS SECTION UNDER "SALVAGE MATERIALS".		 g. ANSI/TIA-758-A CUSTOMER-OWNED C TELECOMMUNICATIONS INFRASTRUCTURE ST h. ANSI/TIA-606-A ADMINISTRATIVE STA TELECOMMUNICATIONS INFRASTRUCTURE
D.	THE SAME MANUFACTURER'S PRODUCT SHALL BE UTILIZED THROUGHOUT THE ENTIRE PROJECT FOR ALL COPPER AND FIBER OPTIC STRUCTURED CABLING.		i. TIA-1152 REQUIREMENTS FOR FIELD THE MEASUREMENTS FOR BALANCED TWISTED-F
E.	SUBSTITUTIONS: NO SUBSTITUTED PRODUCTS SHALL BE INSTALLED EXCEPT WITH WRITTEN APPROVAL BY OWNER.		j. NECA/FOA-301-2009 STANDARD FOR FIBER OPTICS
1.2	SYSTEM DESCRIPTION		5. INSTALL CABLING IN ACCORDANCE WITH THE M BICSI PUBLICATIONS:
A.	GENERAL:		a. BICSI —— TELECOMMUNICATIONS DISTRIBUTI
	 FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND SERVICES FOR THE INSTALLATION IN ACCORDANCE WITH GENERAL PROVISIONS OF SPECIFICATIONS AND THE CONTRACT DRAWINGS. COMPLETELY COORDINATE WITH WORK OF ALL OTHER TRADES. 		(TDMM) b. BICSI —— INFORMATION TECHNOLOGY SYST METHODS MANUAL (ITSIMM)
	 COMPLETELY COORDINATE WITH WORK OF ALL OTHER TRADES. PROVIDE ALL SUPPLEMENTARY OR MISCELLANEOUS ITEMS, 		c. BICSI NETWORK DESIGN REFERENCE DE
	APPURTENANCES AND DEVICES INCIDENTAL TO OR NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION, WHETHER OR NOT SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.		d. BICSI —— OUTSIDE PLANT DESIGN REFEREN e. BICSI —— WIRELESS DESIGN REFERENCE MA
	4. PROVIDE ALL FLOOR PENETRATIONS, FLOOR SLEEVES, CONDUIT RACEWAYS, WALL PENETRATIONS, ETC. NOT SHOWN ON THE ELECTRICAL PLANS BUT NEEDED FOR THE ROUTING OF CABLING PROVIDED HEREIN.		f. ANSI/BICSI 005-2013 ELECTRONIC SAI SYSTEM DESIGN AND IMPLEMENTATION BES
	5. PROVIDE LABOR FOR TESTING HORIZONTAL AND BACKBONE CABLING.		g. BICSI —— ELECTRONIC SAFETY AND SECUR (ESSDRM)
	6. PROVIDE RE-ENTERABLE FIRE STOPPING.		h. INFOCOMM/BICSI AUDIO VISUAL DESIGN
	7. PROVIDE TELECOMMUNICATIONS BONDING AND GROUNDING SYSTEM.		(AVDRM)
В.	PROVIDE COMPLETE INSTALLATION FOR STRUCTURED CABLING SYSTEM AND PHYSICAL SUPPORT SYSTEM INCLUDING BUT NOT LIMITED TO:		i. NECA/BICSI 607-2011 STANDARD FOR BONDING AND GROUNDING PLANNING AND FOR COMMERCIAL BUILDINGS
	 BACKBONE PATHWAY: CONFORM TO EIA/TIA-569-B USING CONDUIT AS INDICATED. 	1.5	SUBMITTALS
	2. HORIZONTAL PATHWAY: CONFORM TO EIA/TIA-569-B USING CONDUIT AS INDICATED.	A.	SEE DIVISION 1 SECTION "SUBMITTAL PROCEDURES PRODUCT DATA.
	 AS INDICATED. 3. PREMISE WIRING: BY CONTRACTOR. COMPLETE FROM FACILITY ENTRANCE TO EACH OUTLET, USING WIRING, CABLE, EQUIPMENT, AND DEVICES AS SPECIFIED OR NOT SPECIFICALLY MENTIONED OR SHOWN, WHICH MAY BE NECESSARY TO COMPLETE OR PERFECT ALL PARTS OF 	В.	PRODUCT DATA: PROVIDE THE MOST CURRENT C PRODUCTS SPECIFIED AND SHOWN ON DRAWINGS, AND CONTRACT DOCUMENTS.
	4. CATEGORY 6 UTP HORIZONTAL CABLES.	C.	SHOP DRAWINGS: THE CONTRACTOR SHALL SUBMI (SHOP DRAWINGS AND EQUIPMENT SUBMITTALS) O THIS DIVISION OF THE SPECIFICATIONS TO THE EN FOR REVIEW. SUCH SUBMITTALS SHALL INDICATE EQUIPMENT OR MATERIAL WILL BE INSTALLED AND
	5. SINGLE-MODE AND MULTI-MODE OPTICAL FIBER BACKBONE CABLES.		SUFFICIENT MANUFACTURER'S INFORMATION TO DE MATERIAL IS IN ACCORDANCE WITH THESE SPECIFI
	 WORK AREA TELECOMMUNICATION OUTLETS. WALL MOUNTED OUTLETS. 	D.	FIELD QUALITY-CONTROL TEST REPORTS.
	8. EQUIPMENT MOUNTING RACKS AND RACK ENCLOSURES.	E.	WARRANTIES: THE CONTRACTOR SHALL WARRANT THE INSTALLATION THEREOF FROM DEFECT FOR A
	9. CATEGORY 6 SHIELDED MODULAR AND DISCRETE PATCH PANELS.		YEARS AFTER FINAL ACCEPTANCE OF THE BUILDIN OTHERWISE FOR A SPECIFIC ITEM OF EQUIPMENT (IN THE GENERAL OR SUPPLEMENTAL CONDITIONS)
	10. OPTICAL FIBER ENCLOSURES.	1.6	PROJECT RECORDS
	11. OPTICAL FIBER CONNECTORS.	A.	SEE DIVISION 1 SECTION "PROJECT RECORD DOCUM RECORD DRAWINGS, RECORD SPECIFICATIONS AND
	12. CATEGORY 6 SHIELDED PATCH AND EQUIPMENT CORDS	B.	PROVIDE PROJECT MEP RECORD DRAWINGS. SUCH
	13. OPTICAL FIBER PATCH CORDS.		REPRESENT INSTALLED CONDITIONS, INCLUDING AC OUTLETS AND LABELING OF OUTLETS. THE RECOR NAME, AND MUST DESCRIBE THE ORIGIN POINT AN THE CABLE. THE CABLE RECORD WILL PROVIDE FIL
	14. WIRE MANAGEMENT. 15. FIELD TESTING.		THE CABLE. THE CABLE RECORD WILL PROVIDE FIE AND/OR CONNECTIONS ARE ASSIGNED TO EACH C FIBER STRAND INCLUDED IN THE INFRASTRUCTURE
	16. CONDUIT FLOOR SLEEVES, CONDUIT AND SUPPORTS REQUIRED FOR		MAINTAINED IN A COMPUTER WORKSHEET, OR IN A E.G. MICROSOFT EXCEL 2010. A CABLE RECORD BACKBONE CABLE. FULL ELECTRONIC FILE SET OF
	INSTALLATION OF ALL CABLING. 17. RE-ENTERABLE FIRE STOPPING.		SHALL BE MADE BY QUALIFIED DRAFTSPERSONS T WORK AND LETTERING AS ACCURATE AS POSSIBLE
1.3	RELATED SECTIONS	C.	LABELING AND ADMINISTRATION DOCUMENTATION
	APPLICABLE PROVISIONS OF DIVISION 1 GOVERN WORK UNDER THIS SECTION.	D.	MANUFACTURERS EXTENDED WARRANTY
B.	DIVISION 26 SECTION "COMMON WORK RESULTS FOR ELECTRICAL"	E.	COPPER AND OPTICAL CABLE CERTIFICATION TEST DIGITAL FORM
C.	DIVISION 26 SECTION "GROUNDING AND BONDING"	F.	OPTICAL FIBER POWER METER/LIGHT SOURCE TES
D.	DIVISION 26 SECTION 'RACEWAY AND BOXES"		
	DIVISION 26 SECTION "WIRING DEVICES"		
	SECTION 281300 ACCESS CONTROL SECTION 282300 VIDEO SURVEILLANCE		
	REFERENCES		
A.	DESIGN, CONSTRUCT, TEST AND INSTALL TELECOMMUNICATIONS CABLING		QUALITY ASSURANCE
	NETWORKS PER MANUFACTURER'S REQUIREMENTS AND IN ACCORDANCE STATE CODES, LOCAL CODES, AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION (AHJ). DEMONSTRATE A THOROUGH KNOWLEDGE AND UNDERSTANDING OF ALL CURRENT INDUSTRY STANDARDS AND INSTALLATION MANUALS THAT RELATE PRINCIPALLY TO THE FOLLOWING STANDARDS:	Α.	ALL DIVISION 27 DESIGN SERVICES SHALL BE DIRE BICSI (BUILDING INDUSTRY CONSULTING SERVICE) I COMMUNICATIONS DISTRIBUTION DESIGNER) HAVING YEARS ACTIVE DESIGN EXPERIENCE UNDER THIS C DUTIES ASSIGNED TO THE RCDD SHALL INCLUDE, THE FOLLOWING: ALL ASPECTS OF STRUCTURED C
	1. NFPA 70 NATIONAL ELECTRICAL CODE (NEC)		ELEVATIONS, PATHWAYS, ENTRANCES, GROUNDING ARCHITECT/DESIGNER SHALL BE RESPONSIBLE TO FUNCTIONS DO NOT INTERFERE WITH, OR OTHERWI
	2. NFPA 101 LIFE SAFETY CODE	R	CRITICAL ELEMENTS OF THE DESIGN. THE STRUCTURED CABLING SYSTEM SHALL BE PAN
	 ANSI/NECA/BICSI 568-2006 STANDARD FOR INSTALLING COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING ANSI/TIA STANDARDS: 	ט.	CABLING SYSTEMS. THE TELECOMMUNICATION TECH BE CERTIFIED, FULLY TRAINED AND QUALIFIED IN TESTING OF THE EQUIPMENT TO BE INSTALLED. EN
	4. ANSI/TIA STANDARDS:		CONTRACTOR AND ITS TECHNICIANS ARE QUALIFIE

32'

0 2' 4' 1/4"=1'-0"

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

OMMUNICATIONS	CABLING	FOR

- ING TELECOMMUNICATIONS
-)-PAIR NENTS STANDARD
- ABLING COMPONENTS
- NDARD FOR
- _DING GROUNDING FOR TELECOMMUNICATIONS
- OUTSIDE PLANT ANDARD
- NDARD FOR COMMERCIAL
- EST INSTRUMENTS AND AIR CABLING
- INSTALLING AND TESTING
- MOST RECENT EDITION OF
- TION METHODS MANUAL
- EMS INSTALLATION
- SIGN MANUAL (NDRM) NCE MANUAL (OSPDRM)
- ANUAL (WDRM)
- ETY AND SECURITY (ESS) PRACTICES
- RITY REFERENCE MANUAL
- REFERENCE MANUAL
- **TELECOMMUNICATIONS** NSTALLATION METHODS
- FOR SUBMITTING
- CATALOG DATA FOR ALL THESE SPECIFICATIONS
- T COMPLETE INFORMATION IN PROPOSED ITEMS IN IGINEER AND/OR OWNER WHERE THE PROPOSED SHALL INCLUDE TERMINE THAT THE ICATIONS.
- TY THE EQUIPMENT AND PERIOD OF TWENTY (20) IG (UNLESS NOTED)
- MENTS" FOR SUBMITTING RECORD PRODUCT DATA
- DRAWINGS SHALL FULLY TUAL LOCATION OF D WILL SHOW THE CABLE) DESTINATION POINT C LDS FOR WHAT SERVICES ABLE PAIR OR OPTICAL RECORDS MUST BE COMPUTER DATABASE S PREPARED FOR EACI THE RECORD DRAWINGS O MATCH EXISTING LINE
- **RESULTS AND FILES IN**
- RESULTS IN DIGITAL
- ECTLY PERFORMED BY A RCDD (REGISTERED A MINIMUM OF FIVE (5) REDENTIAL. SPECIFIC BUT NOT BE LIMITED TO, ABLING, RACK AND BONDING, ETC. THE ASSURE THAT OTHER MEP SE INFRINGE UPON,
- NDUIT ALONG WITH BELDEN INICIANS EMPLOYED SHALL THE INSTALLATION AND IDENCE THAT THE TO INSTALL THIS EQUIPMENT SHALL BE INCLUDED WITH SHOP DRAWING SUBMITTALS. THE CONTRACTOR SHALL HAVE AS AN EMPLOYEE AT LEAST ONE BICSI RCDD ON

- STAFF.
- MANUFACTURER CERTIFICATIONS SHALL NOT BE PROJECT SPECIFIC AND SHOULD BE VALID FOR ANY AND ALL PROJECTS COMPLETED BY CONTRACTOR.
- D. THE CONTRACTOR FOR ALL NEW CONSTRUCTION INVOLVING RENOVATIONS OR REMODELING IN ANY BUILDINGS OR STRUCTURES WERE A 20-YEAR EXTENDED SYSTEM WARRANTY IS IN EFFECT SHALL BE AN APPROVED AND AUTHORIZED INSTALLER OF THE EXISTING INSTALLED SYSTEM. ANY NEW COMMUNICATIONS CABLING SHALL BE OF THE SAME MANUFACTURER AND WARRANTY UPDATED TO INCLUDE ANY NEW INSTALLATIONS.
- . THE ONSITE SUPERVISOR AND/OR PROJECT LEAD OF THE INSTALLATION TEAM SHALL BE CURRENT WITH THE MANUFACTURER'S PARTNER TRAINING REQUIREMENTS AS A MINIMUM REQUIREMENT PRIOR TO, DURING AND THE CLOSING OF THE PROJECT.
- MATERIAL AND EQUIPMENT SHALL BE NEW, AND CONFORM TO GRADE QUALITY, AND STANDARDS SPECIFIED. EQUIPMENT AND MATERIALS OF THE SAME TYPE SHALL BE A PRODUCT OF THE SAME MANUFACTURER THROUGHOUT
- SUBCONTRACTORS SHALL ASSUME ALL RIGHTS AND OBLIGATIONS TOWARD THE CONTRACTOR THAT THE CONTRACTOR ASSUMES TOWARD THE OWNER AND ENGINEER/DESIGNER.
- PART 2 PRODUCTS
- 2.20 CABLE AND WIRING A. HORIZONTAL CABLE
 - 1. PLENUM CAT-6 BELDEN MEDIA TWIST BONDED-PAIR NETWORK CABLE 1874A OR APPROVED EQUAL WILL BE ALLOWED FOR ALL INDOOR CATEGORY 6 SHIELDED PREMISE CABLING CHANNELS, CONNECTING HARDWARE, PATCH PANELS, FACEPLATES OR MOUNTING FRAMES CONTAINED WITHIN SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES CONFORMING TO THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS.
- 2. <u>CORNING LANSCAPE SOLUTIONS</u> OR APPROVED EQUAL WILL BE ALLOWED FOR ALL INDOOR OR OUTDOOR OPTICAL FIBER PREMISES CABLING, CONNECTING HARDWARE. PATCH PANELS. FACEPLATES OR MOUNTING FRAMES CONTAINED WITHIN SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES CONFORM TO THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS.
- 3. WHERE NO MANUFACTURER IS SPECIFIED OR COLOR AVAILABLE, PROVIDE PRODUCTS OF MANUFACTURERS IN COMPLIANCE WITH REQUIREMENTS. SUBSTITUTE WITH EQUIVALENT IN SPECIFICATIONS. SUBMIT FOR OWNER'S APPROVAL
- 4. THE COMPONENTS AND CABLE SHALL BE FROM THE COMPONENT MANUFACTURER'S APPROVED SYSTEM AND ALL OF THE PRODUCTS SHALL BE MANUFACTURED BE ONE OF THE APPROVED MANUFACTURERS OR DOCUMENTED AND APPROVED EXCEPTION AND SHALL BE INCLUDED WITHIN THE WARRANTY.
- 5. PROVIDE PRODUCTS OF MANUFACTURERS AS NAMED IN INDIVIDUAL ARTICLE SECTIONS.
- 6. NOTICE*** THIRD PARTY INSTALLED PREMISE CABLING SYSTEMS THAT ARE NOT INCLUDED IN THIS SECTION SHALL BE AN ALTERNATE JACKET COLOR THAT IS NOT DESIGNATED IN THIS SECTION SHALL BE APPROVED BY OWNER BEFORE INSTALLATION; E.G. ACTIVE AND PASSIVE ELECTRONIC ADAPTER DEVICES UTILIZED TO CONNECT COMPONENTS OVER LOW-VOLTAGE CABLE.
- 2.21 WORK AREA OUTLETS
- A. ACCEPTABLE MANUFACTURERS:
- 1. PANDUIT
- 2. SUBSTITUTIONS: PERMITTED
- B. SINGLE-GANG STAINLESS STEEL WALL PLATE WITH LABEL HOLDERS AND FOUR (4) OPENINGS CONTAINING THE FOLLOWING DEVICES:
- . DATA OUTLET -- 8-PIN MODULAR, CATEGORY 6, STANDARD, T568B. PANDUIT MINI-COM TX-6 PLUS.
- 2. WALL PLATE: PANDUIT #CFP4
- 3. BLANK OUTLET COVER BLACK OR GRAY
- 2.22 WALL OR HARD LID DATA WORK AREA OUTLETS (WIRELESS ACCESS POINT) A. ACCEPTABLE MANUFACTURERS:
- 1. PANDUIT

1. PANDUIT

- 2. SUBSTITUTIONS: PERMITTED
- . SINGLE-GANG WHITE WALL PLATE WITH LABEL HOLDERS AND TWO (2) OPENINGS INSTALLED IN 1-GANG RECESSED MOUNTING FRAME, CONTAINING THE FOLLOWING DEVICES:
- . DATA OUTLET -- 8-PIN MODULAR, CATEGORY 6, STANDARD, T568B. PANDUIT MINI-COM TX-6 PLUSOVE CEILING DATA ONLY WORK AREA OUTLETS (WIRELESS ACCESS POINT)
- A. ACCEPTABLE MANUFACTURERS:
- 2. SUBSTITUTIONS: PERMITTED
- B. CATEGORY 6 CABLE INSTALLED WITH A FIFTEEN (15) FOOT SERVICE LOOP AND TERMINATED WITH A UTP MODULE (KEYSTONE JACK). CABLE SHALL BE INSTALLED WITHOUT A FACEPLATE AND STORED ABOVE ACCESSIBLE CEILING TO BE LOCATED BY INSTALLER:
- 1. DATA OUTLET -- 8-PIN MODULAR, CATEGORY 6, STANDARD, T568B. PANDUIT MINI-COM TX-6 PLUS.
- 2.24 WALL OR HARDLID DATA ONLY WORK AREA OUTLETS (SECURITY CAMERA) A. ACCEPTABLE MANUFACTURERS:
- 1. PANDUIT
- 2. SUBSTITUTIONS: PERMITTED
- B. SINGLE-GANG WHITE WALL PLATE WITH LABEL HOLDERS AND TWO (2) OPENINGS INSTALLED IN 1-GANG RECESSED MOUNTING FRAME, CONTÁINING THE FOLLOWING DEVICES:
- 1. DATA OUTLET -- 8-PIN MODULAR, CATEGORY 6, STANDARD, T568B. PANDUIT MINI-COM TX-6 PLUS. 2. BLANK OUTLET COVER – BLACK OR GRAY
- 2.25 ABOVE CEILING DATA ONLY WORK AREA OUTLETS (SECURITY CAMERA) A. ACCEPTABLE MANUFACTURERS:

0 3" 6"

1 1/2"=1'-0"

1"=1'-0" 0 6" 1' 2'

1. PANDUIT

1'

3/4"=1'-0"

- 2. SUBSTITUTIONS: PERMITTED
- 1. DATA OUTLET -- 8-PIN MODULAR, CATEGORY 6, STANDARD, T568B. PANDUIT MINI-COM TX-6 PLUS.
- 2. BLANK OUTLET COVER BLACK OR GRAY
- 2.26 RACK MOUNTED COPPER PATCH PANEL AND JACKS (CATEGORY 6)
- A. ACCEPTABLE MANUFACTURERS:
- 2. SUBSTITUTIONS: PERMITTED
- 2.27 RACK MOUNTED OPTICAL FIBER TERMINATION PANEL AND SHELF
- A. ACCEPTABLE MANUFACTURERS:
- CLOSET CONNECTOR HOUSING (CCH)
- DUPLEX, SINGLE-MODE (OS1), CCH PIGTAILED CASSETTES
- DUPLEX, MULTIMODE (OM4), CCH PIGTAILED CASSETTES
- DUPLEX, SINGLE-MODE (OS1), CCH RIBBON PIGTAILED CASSETTES
- EQUIVALENTS FOR GROUNDING AND BONDING ONLY.
- 6. SUBSTITUTIONS: PERMITTED
- CCH PANELS, 4U SHELF HOLDS UP TO TWELVE (12) CCH PANELS. EACH CASSETTE HOLDS UP TO TWENTY-FOUR (24) LC DUPLEX SHUTTERED ADAPTERS
- C. CAMPUS BUILDING SHALL PROVIDE SPACE FOR TERMINATING AND LC TYPE CONNECTION IN ALL NEW WORK AND ANY REPLACED SHELVING SHALL BE RACK MOUNTABLE AND SIZED TO ACCOMMODATE OTAL NUMBER OF OPTICAL FIBERS BEING TERMINATED IN THE RACK COUPLINGS SHALL ACCOMMODATE THE TYPE OF FIBER. ANY OTHER WITH OWNER.
- D. STRAIN RELIEF BRACKET FOR RACK MOUNT HARDWARE AND ARMORED CABLE GROUNDING SHALL BE FURNISHED AND INSTALLED TO SUPPORT AND CAN BE USED TO PROPERLY BOND THE METALLIC ARMOR MAY BE ACCEPTABLE UPON APPROVAL OF SUBMITTAL. PROVIDE MINIMUM 4' SERVICE LOOP.
- E. GROUNDING AND BONDING ACCESSORIES AS SPECIFIED AND REQUIRED.

A. ACCEPTABLE MANUFACTURERS:

PLENUM CABLE

VOICE GRADE

- 5. CIRCA, EMERSON, SIEMON, PANDUIT, SUPERIOR ESSEX, TE, ORTRONICS, PROTECTION)
- 6. SUBSTITUTIONS: PERMITTED
- MULTIMODE, 50/125 µM DIAMETER TIGHT-BUFFERED, INSIDE PLANT OM4 OPTICAL FIBER, WITH FIBER COUNTS AS INDICATED ON DRAWINGS, WITH MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS THAT MEET OR EXCEED ANSI/TIA-568-C.3.
- C. NOTE: LISTED TYPE OFCP (AS REQUIRED IN THE NEC 2011)
- D. SINGLE-MODE, 9/125 µM DIAMETER TIGHT-BUFFERED, INSIDE PLANT OS1 OPTICAL FIBER, WITH FIBER COUNTS AS INDICATED ON DRAWINGS, WITH OR EXCEED ANSI/TIA-568-C.3.
- E. NOTE: LISTED TYPE OFCP (AS REQUIRED IN THE NEC 2011)
- F. SOLID COPPER, 24 AWG, 100 BALANCED, MULTI-PAIR, CATEGORY 3 CABLE, IN SIZES AS INDICATED ON THE DRAWINGS, WITH MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS THAT MEET OR EXCEED ANSI/TIA-568-C.2.
- G. NOTE: LISTED TYPE CMP (AS REQUIRED IN THE NEC 2011)
- OR EXCEED ANSI/TIA-568-C.2.

A. ACCEPTABLE MANUFACTURERS:

S(.218) C(.31)

R886B10H1D)

3"=1'-0"

4. SUBSTITUTIONS: PERMITTED

B. CATEGORY 6 CABLE INSTALLED WITH A FIFTEEN (15) FOOT SERVICE LOOP AND TERMINATED WITH A UTP MODULE (KEYSTONE JACK). CABLE SHALL BE INSTALLED WITHOUT A FACEPLATE AND STORED ABOVE ACCESSIBLE CEILING TO BE LOCATED BY INSTALLER:

1. ANGLED PATCH PANEL. PANDUIT: #UICMPPA48BLY

1. CORNING LANSCAPE SOLUTIONS, CCH-01U, CCH-02U, CCH-04U,

2. CORNING LANSCAPE SOLUTIONS, CCH-CS24-AE-POORE, 24 F, LC, UPC,

3. CORNING LANSCAPE SOLUTIONS, CCH-CS24-AD-POOQE, 24 F, LC, UPC,

4. CORNING LANSCAPE SOLUTIONS, CCH-CS24-AE-POORJ, 24 F, LC, UPC,

5. FIBER OPTIC ARMOR GROUNDING MANUFACTURERS CORNING, ELECTRIC MOTION COMPANY, PANDUIT, TE, SIEMON, COMMSCOPE OTHERS; SUBMIT

B. CCH 19" RACK MOUNTED, OPTICAL FIBER TERMINATION SHELF, 1U SHELF HOLDS UP TO TWO (2) CCH PANELS, 2U SHELF HOLDS UP TO FOUR (4)

ORGANIZATION OF OPTICAL FIBERS. TERMINATION OF OPTICAL FIBER SHALL CONNECTIONS FROM AFFECTED OLD WORK CONSTRUCTION. OPTICAL FIBER CONNECTING HARDWARE OR EXPANSION PANELS FOR THE SHELVES WILL BE INSTALLED PER THE MANUFACTURER. COORDINATE QUANTITIES AND TYPE

EACH CABLE INDEPENDENTLY. CABLES SHARING THE SAME CLAMP AND OR STRAIN-RELIEF KIT WILL NOT BE ACCEPTABLE. A METAL STRUT OR BRACKET BUILT TO SUPPORT MORE THAN ONE CABLE AT THE SAME TIME

2.28 DATA AND TELECOMMUNICATIONS SERVICE BACKBONE CABLE

1. CORNING, SINGLE-MODE (OS1) SMF-28E+®, RIBBON INTERLOCKING

2. CORNING, 50 MM MULTIMODE (OM4), RIBBON INTERLOCKING PLENUM

3. SUPERIOR ESSEX ARMM (VERTICAL RISER DISTRIBUTION), CATEGORY 6

4. SUPERIOR ESSEX CATEGORY 3 (HORIZONTAL DEMARCATION EXTENSION)

ITW, HUBBELL, HOFFMAN, PREFORMED (HARDWARE, TERMINAL HARDWARE

MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS THAT MEET

SOLID COPPER, 24 AWG, 100 BALANCED, MULTI-PAIR, ARMM RISER RATED SHIELDED CABLE, IN SIZES AS INDICATED ON THE DRAWINGS, WITH MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS THAT MEET

I. NOTE: LISTED TYPE CMR (AS REQUIRED IN THE NEC 2011) 2.29 UNDERGROUND DATA STATION AND TELECOMMUNICATIONS CABLE (COPPER)

1. SUPERIOR ESSEX OSP BROADBAND, ALUMINUM TAPE SHIELD (BBDN6) 2. ELECTRIC MOTION COMPANY, SHIELD BOND CONNECTOR, EM 9556-BW

3. ELECTRIC MOTION COMPANY, SHIELD BOND CONNECTOR WITH LEADS, (EM

B. SOLID COPPER, 23 AWG, 100 BALANCED FULLY SCREENED UNSHIELDED

TWISTED-PAIR (S/UTP) CATEGORY 6 BROADBAND OSP CABLES WITH FOUR INDIVIDUALLY TWISTED-PAIRS, WHICH MEET OR EXCEED THE MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS IN ANSI/TIA-568-C.2 UP TO 250MHZ. FOLLOW TECHNICAL GUIDELINES, TG36, FOR OSP BROADBAND INSTALLATION.

- C. SOLID COPPER, 24 AWG, 100 BALANCED MULTI-PAIR, GEL-FILLED DUCTS PE-89 CABLE, IN SIZES AS INDICATED ON THE DRAWINGS, WHICH MEET OR EXCEED THE MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS LISTED IN ANSI/TIA-568-C.2 AND ANSI/TIA-758-A.
- D. OVERVOLTAGE BUILDING ENTRANCE PROTECTORS ARE REQUIRED ON BOTH ENDS OF THE CABLE FOR LENGTHS LONGER THAN 150' FROM PERIMETER OF CABLE SERVICE ENTRANCE.

2.30 UNDERGROUND TELECOMMUNICATIONS CABLE (OPTICAL FIBER)

- A. ACCEPTABLE MANUFACTURERS:
- 1. CORNING LANSCAPE SOLUTIONS, SST-RIBBON™ SINGLE-TUBE, GEL-FREE, ARMORED CABLE, AND SINGLE-MODE (OS1) SMF-28E+® OUTDOOR RATED PE OUTER JACKET, E.G. PART NUMBER: 048EC5-14100D53.
- 2. CORNING LANSCAPE SOLUTIONS, GEL-FREE, ARMORED CABLE, AND MULTI-MODE (OM4) SMF-28E+® OUTDOOR RATED PE OUTER JACKET.
- 3. SUBSTITUTIONS: PERMITTED
- SINGLE-MODE, 9/125 µM DIAMETER, SINGLE JACKET/SINGLE ARMOR, GEL-FREE, OUTDOOR, STRANDED LOOSE TUBE, OS1 OPTICAL FIBER CABLE, WITH NUMBER OF USABLE FIBERS AS SHOWN ON DRAWINGS, WHICH MEET OR EXCEED THE MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS LISTED IN ANSI/TIA-568-C.3 AND ANSI/TIA-758-A.
- . MULTI-MODE, 50/125 μM DIAMETER, SINGLE JACKET/SINGLE ARMOR, GEL-FREE, OUTDOOR, STRANDED LOOSE TUBE, OM4 OPTICAL FIBER CABLE, WITH NUMBER OF USABLE FIBERS AS SHOWN ON DRAWINGS. WHICH MEET OR EXCEED THE MECHANICAL AND TRANSMISSION PERFORMANCE SPECIFICATIONS LISTED IN ANSI/TIA-568-C.3 AND ANSI/TIA-758-A
- D. EXISTING OUTSIDE PLANT FIBER OPTIC CABLE NEEDS TO BE ACCESSED FOR VIABILITY OF BEING USED IN PLACE OF INSTALLING NEW. A NEW EQUIVALENT OR LARGER STRAND COUNT OPTICAL FIBER CABLE SHALL BE REQUIRED TO BE INSTALLED IF EXISTING CABLE CAN'T BE UTILIZED FOR
- 2.31 UNDERGROUND INNERDUCT
- A. ACCEPTABLE MANUFACTURERS:
- MAXCELL TRACEABLE INNERDUCT (WWW.MAXCELLINNERDUCT.COM)
- 2. SUBSTITUTIONS: PERMITTED
- 2.32 TERMINATION BACKBONE
- MATERIALS: PLYWOOD FIRE RESISTANCE COVERING EVERY WALL DETERMINED BY INFORMATION TECHNOLOGY SERVICES ENGINEER. THE WALLS WILL BE COVERED FROM 18 A.F.F. TO CEILING OR 10' A.F.F. SEE CURRENT BICSI TOMM CHAPTER 6 PAGE 19 FOR TELECOMMUNICATIONS ROOM BUILD OUT.
- B. SIZE: AS INDICATED, 3/4 INCH THICK, GRADE AC
- C. FINISH: PPG SPEEDHIDE 42-7 INTERIOR FIRE RETARDANT FLAT LATEX (INTUMESCENCE)
- 2.33 UNDERGROUND VAULT
- A. ACCEPTABLE MANUFACTURERS:
- 1. ARMORCAST POLYMER CONCRETE VAULT, A6001440TAP48MT, 48" X 48" VAULT AND COVER ASSEMBLY, TORSION ASSIST, 48" DEPTH
- 2. SUBSTITUTIONS: PERMITTED
- 2.34 FABRICATION
- A. FABRICATE CUSTOM-MADE EQUIPMENT WITH CAREFUL CONSIDERATION GIVEN TO AESTHETIC, TECHNICAL, AND FUNCTIONAL ASPECTS OF EQUIPMENT AND ITS INSTALLATION.

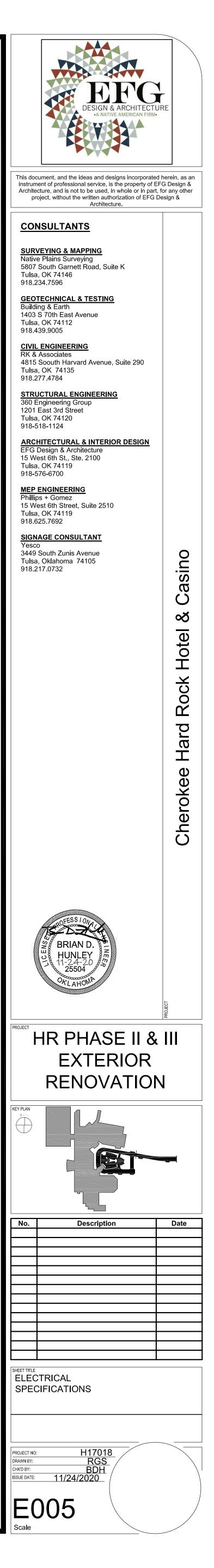
2.35 EQUIPMENT RACKS AND CABLE SUPPORT SYSTEM

A. ACCEPTABLE MANUFACTURERS:

- 1. PANDUIT: #CMR19X84, CABLE MANAGEMENT RACK
- 2. CHATSWORTH: #46353-703, CABLE MANAGEMENT RACK
- 3. B-LINE: #SB556084XU, CABLE MANAGEMENT RACK
- 4. PANDUIT: #NCMV8, VERTICAL MANAGER
- 5. CHATSWORTH: #30095-703, VERTICAL MANAGER
- 6. B-LINE: #SB-571-66D-084, VERTICAL MANAGER
- 7. SUBSTITUTIONS: PERMITTED

2.36 TV SYSTEM

- B. RACKS ARE TO BE MOUNTED SECURELY TO THE FLOOR PER MANUFACTURER'S RECOMMENDATIONS WITH CONCRETE ANCHORS AND SAE GRADE 8 BOLTS. PLACEMENT OF FOOTPRINT TO BE DETERMINED BY OWNER'S ITS ENGINEER. THERE WILL BE A MINIMUM OF ONE CABLE TRAY SECTION THAT SPANS OVER THE RACKS TO DISTRIBUTE CABLE. THE CABLE WILL EXIT THE CABLE TRAY ON WATERFALL AND OR SPILLWAYS. THE LADDER RACK OR CABLE TRAY SYSTEM WILL BE UL RATED FOR GROUNDING AND BONDING ACCORDING TO THE STANDARD ANSI/TIA-607-B IN LIEU OF INSTALLING GROUNDING STRAPS, GRINDING PAINT AND DRILLING HOLES THROUGH SUPPORT STRUCTURE TO MOUNT BOLTS. PROVIDE RACK EXTENSIONS TO CONNECT FLOOR MOUNT RACK TO LADDER RACK. THE TR DESIGN TO BE COORDINATED AND APPROVED BY THE OWNER'S ITS ENGINEER.
- THERE WILL BE A MINIMUM OF TWO (2) SPECIFIED RACKS FURNISHED FOR EVERY 350 DATA WORK AREA OUTLET TERMINATIONS OR 70% FILL OF RACK UNIT SPACES. THERE WILL BE A MINIMUM OF ONE (1) SPECIFIED RACK FOR DATA STATION WORK AREA OUTLETS AND ONE (1) FOR OWNER PROVIDED NETWORK EQUIPMENT. FURNISH AND INSTALL SPECIFIED VERTICAL CABLE MANAGEMENT SYSTEM CHANNELS BETWEEN RACKS AND ON THE ENDS. THE ROOM WILL BE SIZED TO ALLOW FOR 3' OF WORKING CLEARANCE AROUND FRONT SIDE OF THE RACK INCLUDING THE CABLE MANAGEMENT BASED ON AN ESTIMATED 2'X2' RACK FOOTPRINT.
- A. COAXIAL CABLE SHALL BE RG-6 (TYPICAL) AND RG-11 FOR CHANNEL LENGTHS LONGER THAN 150'. TYPE SHALL BE QUAD SHIELDED; SWEEP TESTED A MINIMUM UP TO 1GHZ AND LISTED TYPE CMP, AS REQUIRED PER
- NEC 2011). B. OUTLETS: COMPRESSION F-CONNECTER SUITABLE FOR INSTALLATION IN
- COMMON WALL PLATE WITH VOICE AND DATA OUTLETS. OUTLETS MANUFACTURER SHALL BE THE SAME AS THE WALL PLATE FOR THE STRUCTURED CABLING SYSTEM MANUFACTURER.



- C. ACCEPTABLE MANUFACTURERS:
- BELDEN, E.G. 1189AP, RG-6, COAX BROADBAND CATV COAXIAL
- 2. BELDEN, E.G. 1523AP, RG-11, COAX CATV CABLE
- 3. EXTRON
- 4. LIBERTY
- 5. SUPERIOR ESSEX
- 6. CONNECTOR: SINGLE PIECE COMPRESSION F-PLUG FOR PLENUM QUAD SHIELD 1GHZ CABLE
- 7. CONNECTOR MANUFACTURERS: BELDEN, HOLLAND ELECTRONICS
- 8. SUBSTITUTIONS: PERMITTED

PART 3 – EXECUTION

- 3.1 INSIDE PLANT RACEWAY AND LOW VOLTAGE CABLE
- A. ALL CONDUIT ENDS SHALL HAVE PLASTIC BUSHINGS INSTALLED BEFORE THE CABLE IS PULLED INTO THE CONDUIT.
- CONDUITS WILL NOT BE RUN NEXT TO HOT WATER LINES, STEAM PIPES, OR OTHER UTILITIES THAT MAY PRESENT A SAFETY HAZARD OR CAUSE A DEGRADATION OF SYSTEM PERFORMANCE.
- CONDUITS ENTERING THE TELECOMMUNICATIONS ROOM (TR) SHOULD BE DESIGNED AND ENTER A MINIMUM OF 6" INCHES ABOVE CABLE TRAY ALLOWING FOR THE MOST FLEXIBILITY IN THE ROUTING AND RACKING OF
- D. CONDUITS OR CONDUIT SLEEVES ENTERING THROUGH THE FLOOR OF THE TR SHALL TERMINATE FOUR (4) INCHES ABOVE THE FINISHED FLOOR. TO MAXIMIZE THE USABLE FLOOR SPACE THE ARRAY OF CONDUITS OR SLEEVES NEED TO BE LINED UP ALONG THE REAR CORNER WALL OF INSTALLED ROOMS OPPOSITE THE DOOR WAY.
- . ALL METALLIC TELECOMMUNICATIONS CONDUITS ENTERING THE TR, EQUIPMENT ROOM (ER), OR ENTRANCE FACILITY (EF) SHALL BE BONDED TOGETHER. AND BÒNDÉD TO THE TELECOMMUNICÀTIÓNS MAIN GROUNDING BUSBAR (TGMB) OR TELECOMMUNICATIONS GROUNDING BUSBAR (TGB) WITH #6 AWG GROUND CABLE PER ANSI/TIA-607-B.
- ALL IN-USE AND SPARE CONDUITS ENTERING THE TR, ER, OR EF SHALL BE SEALED AND PLUGGED TO PREVENT THE INTRUSION OF WATER, GASSES, AND RODENTS THROUGHOUT THE CONSTRUCTION PROJECT. WITHIN FIVE DAYS OF RELEASING THE CONDUIT FOR THE INSTALLATION OF CABLE, THE CONDUIT INSTALLATION CONTRACTOR SHALL PROVE ALL CONDUITS TO BE CLEAN AND DRY. UTILIZING MAXCELL REUSABLE TERMINATION BAGS IS THE PREFERRED METHOD FOR OCCUPIED DUCTS TO WATER SEAL. TYPICAL PLASTIC AND RUBBER EXPANSION PLUGS CAN BE USED FOR EMPTY DUCTS
- G. ALL ISP CONDUITS AND INNER-DUCT, USED AND SPARE, SHALL E PLUGGED WITH WATERTIGHT PLUGS AT BOTH ENDS TO PREVENT THE INTRUSION OF WATER, GASSES, AND RODENTS THROUGHOUT THE CONSTRUCTION PROJECT
- H. ALL ISP CONDUITS SHALL HAVE PULL LINES RATED AT A MINIMUM OF 90 KG (200 LB.) PULLING TENSION INSTALLED. THE PULL LINES MUST BE RE-PULLED EACH TIME AN ADDITIONAL CABLE IS INSTALLED.
- PRIOR TO RELEASING THE CONDUIT FOR THE INSTALLATION OF CABLES, ALL ISP CONDUITS MUST BE CLEANED WITH A BRUSH PULLED THROUGH THE CONDUIT AT LEAST TWO TIMES IN THE SAME DIRECTION AND SWABBED WITH CLEAN RAGS UNTIL THE RAG COMES OUT OF THE CONDUIT CLEAN AND DRY. ALL ISP CONDUITS MUST BE TESTED WITH A MANDREL TO PROVE COMPLIANCE WITH THE SWEEP RADIUS REQUIREMENTS THROUGHOUT THE CONDUIT RUN. WITHIN FIVE DAYS OF RELEASING THE CONDUIT FOR THE INSTALLATION OF CABLE, THE CONDUIT INSTALLATION CONTRACTOR SHALL PROVE ALL CONDUITS TO BE CLEAN AND DRY.
- J. PULL BOXES USED WITH TELECOMMUNICATIONS CONDUITS IN INTERIOR LOCATIONS SHALL BE RATED NEMA-1.
- K. PULL BOXES USED IN DAMP OR WET LOCATIONS SUCH AS PLUMBING CHASES OR OUT OF DOORS SHALL BE RATED NEMA-3R.
- L. PULL BOXES SHALL BE INSTALLED IN CONDUITS AT AN INTERVAL NO GREATER THAN EVERY 100 FEET.
- M. A PULL BOX SHALL BE INSTALLED IN CONDUIT RUNS WHENEVER THERE ARE TWO 90°SWEEPS, OR A TOTAL OF 180°OF SWEEPS, IN A CONDUIT RUN.
- 3.2 HORIZONAL AND BACKBONE CABLE INSTALLATION
- INSTALL PREMISE CABLING FROM EACH INFORMATION OUTLET TO THE BACKBONE SYSTEM. INSTALL THE BACKBONE CABLING FROM THE MAIN CROSS CONNECTS TO THE INTERMEDIATE CROSS CONNECTS AND HORIZONTAL CROSS-CONNECTS AS INDICATED.
- B. EACH RUN OF CABLE BETWEEN THE CROSS CONNECT BLOCKS AND THE INFORMATION OUTLET SHALL BE CONTINUOUS WITHOUT ANY JOINTS OR SPLICES AND SHALL NOT EXCEED 90 METERS. CABLE SHALL BE RUN IN CONDUIT OR AS INDICATED. CONDUIT RUNS SHALL NOT CONTAIN MORE THAN TWO (2) 90-DEGREE BENDS AND SHALL NOT EXCEED 100 FEET WITHOUT UTILIZING APPROPRIATELY SIZED BOXES. LONG SWEEP ELBOWS WITH A BEND RADIUS AT LEAST SIX TIMES CONDUIT DIAMETER SHALL BE USED. ALL ELBOWS FOR COMMUNICATIONS CABLE WILL BE SMART CONDUIT BODY™ BY SMART PATHWAYS (WWW.SMARTLB.COM).
- C. CABLE THAT IS NOT RUN IN CONDUIT OR TRAY SHALL BE BUNDLED WITH VELCRO STRAPS SPACED NOT LESS THAN FIVE (5) FEET. THE BUNDLING SHALL BE SUPPORTED VIA "J" HOOKS SECURELY ATTACHED TO THE BUILDING OR BUILDING STRUCTURE AND SHALL NOT BE SUPPORTED BY CEILING SUSPENSION WIRES. PLENUM-RATED CABLE SHALL BE USED IN ALL APPROPRIATE AREAS AND WHERE INDICATED. CABLE TIES ARE NOT TO BE USED. COAXIAL CABLE SHALL BE SUPPORTED INDEPENDENTLY OF VOICE/DATA CABLING. CABLES WILL NOT REST ON LIGHTS, WATER, CEILING SYSTEMS OR POWER LINES.
- D. MAXIMUM CABLE FILL OF CONDUIT SHALL BE 40%.
- 3.3 INFORMATION OUTLET INSTALLATION

8' 16' 1/16"=1'-0" U o ---

- A. ALL WORK AREA OUTLETS (WAO) AND PATCH PANELS SHALL BE CLEARLY MARKED USING PERMANENT MEANS. USE THE FOLLOWING SYSTEM OF NUMBERING (MDF/IDF + WAO ROOM # + PHYSICAL NUMBER OF OUTLET 1-24, E.G. MDF-1234-01)
- 1. ALL WAO AND PATCH PANEL LABELS MUST MATCH ACTUAL OWNERROOM NUMBERS. CAREFUL CONSIDERATION SHOULD BE GIVEN WHEN DEVELOPING AND MAINTAINING A NUMBERING SCHEME THAT IT MATCHES EXACTLY THE ACTUAL ROOM NUMBERS; NOT THE CONSTRUCTION DOCUMENT ROOM NUMBER.
- 2. ALL VOICE AND DATA TERMINATIONS MADE IN THE TELECOM ROOM (TR) SHALL BE MADE IN A NUMERICAL ORDER BY ROOM NUMBER OF EACH
- 3. OUTLET NUMBERS SHALL BE MARKED BY PERMANENT MEANS ON EACH CABLE AT THE OUTLET AND AT THE TR. THE ORDER SHOULD BEGIN WITH THE UPPER FLOORS FIRST WORKING YOUR WAY DOWN IF APPLICABLE.
- WIRELESS ACCESS POINTS (WAP) AND SECURITY CAMERAS (SC) INSTALLED, LABELED, AND TERMINATED. USE THE FOLLOWING SYSTEM OF NUMBERING (MDF/IDF + PHYSICAL NUMBER OF OUTLET 1-24, E.G. MDF-1234-WAP01 ÒR MDF-1234-CAM01)

0 4' 8'

1/8"=1'-0"

- C. THE TYPICAL WIRELESS ACCESS POINT OR SECURITY CAMERA WORK AREA CAN BE INSTALLED IN ACCESSIBLE CEILING SPACE THAT TYPICALLY CONSISTS OF A FIFTEEN (15) FOOT SERVICE LOOP AND ONE (1 STANDARDS COMPLIANT WORK AREA OUTLETS INSTALLED FROM THE WORK AREA OUTLET TO THE TR. TERMINATE DATA CABLES ON RACK MOUNTED MODULAR PATCH PANELS LOCATED IN THE DESIGNATED TR RACK. UNLESS NOTED OTHERWISE.
- D. THE TYPICAL WIRELESS ACCESS POINT OR SECURITY CAMERA INDOOR WORK AREA INSTALLED IN HARD LID CEILING OR WALL MOUNTED LOCATIONS CONSISTS OF A RECESSED JUNCTION BOX. SINGLE-GANG STAINLESS STEEL PLATE WITH LABEL HOLDERS AND ONE (1) STANDARDS COMPLIANT WORK AREA OUTLETS INSTALLED FROM THE WORK AREA OUTLET TO THE TR. TERMINATE DATA CABLES ON RACK MOUNTED MODULAR PATCH PANELS OCATED IN THE DESIGNATED TR RACK. OUTLETS CAN BE ADJUSTED APPROPRIATELY.
- ONE WORK AREA OUTLET CONSISTS OF TWO (2) FOUR-PAIR DATA CATEGORY 6 PLENUM CABLES AND TWO (2) BLANKS, INSTALLED FROM THE WORK AREA OUTLET TO THE TR. QUANTITIES OF WORK AREA OUTLETS TO BE SHOWN ON ELECTRICAL DRAWINGS. TERMINATE DATA CABLE ON RACK MOUNTED MODULAR PATCH PANELS LOCATED IN THE DESIGNATED TR RACK.
- VERTICAL/HORIZONTAL BACKBONE, RISER SYSTEM, HORIZONTAL DATA AND VOICE CABLING WITH ASSOCIATED TERMINATIONS, MOUNTING EQUIPMENT, CABLE PATHWAY AND MANAGEMENT SYSTEMS. TESTING AND OTHER ITEMS/MATERIALS, AS SPECIFIED IN DRAWINGS, THESE SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- G. VERTICAL/HORIZONTAL CAMPUS BACKBONE CABLING CONSISTS OF OF 50/125 µM OM4 MULTIMODE OR 9/125 µM OS1 SINGLE-MODE FOR RUNS OVER 400 FEET, GEL-FREE, SINGLE'LAYER ARMOR, LOOSE TUBE RIBBON OPTICAL FIBER SHALL BE INSTALLED FROM THE MAIN CROSS-CONNECT ON CAMPUS BACKBONE FIBER NODE TO THE INTERMEDIATE CROSS-CONNECT IN THE APPROPRIATE EF. THE SINGLE-MODE WILL BE UTILIZED FOR INTER-BUILDING DATA COMMUNICATIONS, TELECOMMUNICATION SERVICE AND PREMISES NETWORK SWITCHING EQUIPMENT.
- H. VERTICAL/HORIZONTAL RISER SYSTEM CABLING CONSISTS OF 50/125 UM OM4 MULTIMODE OR 9/125 µM OS1 SINGLE-MODE (FOR RUNS OVER 400 FEET). GEL-FREE, INTER-LOCKING ARMOR, OPTICAL FIBER PLENUM ARMÓRED CABLE SHALL BE INSTALLED FROM THE INTERMEDIATE CROSS-CONNECT IN THE APPROPRIATE EF TO EACH TR. THE MULTIMODE WILL BE UTILIZED FOR INTERIOR INSTALLATIONS ONLY FOR EXTENDING DATA COMMUNICATIONS. TELECOMMUNICATION SERVICE AND INTERCONNECTING PREMISE NETWORK SWITCHING EQUIPMENT BETWEEN TR'S.
- WAO MOUNTED IN SURFACE MOUNTED METALLIC RACEWAY, E.G. WIREMOLD'S 2000, 4000, OR 5000 SERIES RACEWAYS SHALL BE FURNISHED WITH A COMPATIBLE MOUNTING FRAME OR PLATE TO FIT INSTALLED APPROVED SCS WAO. THE WAO SHALL BE SURFACE OR FLUSH MOUNTED AS INDICATED ON THE NUMBERED NOTES AS SPECIFIED IN DRAWINGS, THESE SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- J. ALL INDOOR WAO SHALL HAVE A MINIMUM THREE-QUARTER INCH CONDUIT WITH PULL STRING. INCREASE THE CONDUIT SIZE AS NECESSARY FOR THE QUANTITY OF CABLES TO BE INSTALLED. CABLE FILL SHALL NOT EXCEED
- K. ALL INDOOR WAO OUTLETS, INSTALLED IN WET LOCATIONS SHALL HAVE A 3.5 PATHWAY INSTALLATIONS MINIMUM 1" INCH CONDUIT AND CABLING WILL BE RATED FOR WET LOCATION PER NEC. INCREASE THE CONDUIT SIZE AS NECESSARY FOR THE QUANTITY OF CABLES TO BE INSTALLED. CABLE FILL SHALL NOT EXCEED 40%.
- L. ALL WAO SHALL BE MOUNTED IN A MINIMUM FOUR (4)-INCH BY FOUR (4)-INCH BY TWO AND ONE-HALF (2 ½)-INCH DEEP DOUBLE GANG OUTLET BÓX WITH A SINGLE GANG MUD RING.
- M. ALL INDOOR WALL MOUNTED OR HARD LID WAP OR SECURITY CAMERA WAO SHALL BE MOUNTED IN A DEEP SINGLE GANG RECESSED ELECTRICAL BOX.
- N. ALL EXTERIOR WALL/CEILING MOUNTED WAP OR SECURITY CAMERA WAO SHALL BE MOUNTED' IN A WEATHER PROOF SINGLE GANG JUNCTION BOX VERTICALLY FLUSH-MOUNTED WITH CONDUIT AND PULL STRING EXTENDING INSIDE THE BUILDING TO AN ACCESSIBLE SPACE. JUNCTION BOX SHALL B COVERED WITH A STAINLESS STEEL FACEPLATE. THE JUNCTION BOX MAY NOT BE UTILIZED FOR OTHER PURPOSES OR CONTAIN NON-NETWORK CONNECTIONS. VISUAL OBSTRUCTIONS OR BRIGHT LIGHTS THAT MAY PREVENT APPROPRIATE VIEWING ANGLES OR PICTURE QUALITY FOR THE SECURITY CAMERA MAY NOT EXIST WITHIN FOUR (4) FEET OF SECURITY CAMERA IN ANY DIRECTION.
- O. ALL EXTERIOR POLE MOUNTED SECURITY CAMERA WAO SHALL CONTAIN A SUITABLY-SIZED 10" X 10" X 5" WEATHERPROOF ENCLOSURE AT THE BASE OF THE POLE. ENCLOSURE SHOULD BE DEDICATED TO SECURITY CAMERA EQUIPMENT. ENCLOSURE SHOULD BE CAPABLE OF HOLDING A 2" X 4.5" X 7" MEDIA CONVERTER AND 3.5" X 6.5" X 9" POWER INJECTOR. FIBER CABLE IS TERMINATED IN THE BASE OF THE POLE WITH A MINIMUM OF 6 FEET OF SLACK CABLE. 120 VAC POWER SHOULD BE PROVIDED IN A STANDARD NEMA 5-20R RECEPTACLE INSIDE THE ENCLOSURE. POWER SHOULD BE INDEPENDENT OF THE POLE'S LIGHTING AND ALWAYS ENERGIZED (NO TIMERS). POWER SHOULD BE ON ITS OWN CIRCUIT AND CAPABLE OF BEING POWER CYCLED VIA ELECTRICAL BREAKER IN BUILDING. LOCATION SHOULD BE PROVIDED AT TOP OF POLE FOR A SECURITY CAMERA TO BE INSTALLED WITH STRAP AND PENDANT MOUNT. ACCESS PANEL OR HOLE (MINIMUM 1.5" DIAMETER) SHOULD BE PROVIDED AT SECURITY CAMERA LOCATION WITH PULL STRING TO ENCLOSURE AT BASE OF POLE. ACCESS PANEL OR HOLE SHOULD BE FITTED WITH APPROPRIATE REMOVABLE WEATHERPROOF COVERING
- P. AN ELECTRICAL OUTLET SHALL ALWAYS BE LOCATED WITHIN THREE (3) FEET OF A TELECOMMUNICATIONS OUTLET EXCLUDING SPECIAL CIRCUIT DEVICES LIKE POE POWERED DEVICES, E.G. WIRELESS ACCESS POINT AND IP SECURITY CAMERAS.
- 3.4 OUTSIDE PLANT PIPING AND CABLE
- A. DIRECT BURIAL OF TELECOMMUNICATIONS CABLE WILL NOT BE APPROVED.
- B. ALL OSP TELECOMMUNICATIONS CONDUITS SHALL BE SCHEDULE-40 OR SCHEDULE-80 (IF PLACED NEAR THE PHYSICAL PLANT WATER LINES) RIGID NONMETALLIC CONDUIT, POLYVINYL CHLORIDE (PVC), AND MUST MEET THE REQUIREMENTS OF NEMA TC 6. ALL CONDUIT SECTIONS SHALL BE GLUED WITH PVC PIPE GLUE TO FORM A WATERTIGHT JOINT. SPACERS ARE REQUIRED TO MAINTAIN PROPER SEPARATION BETWEEN MULTIPLE CONDUITS IN A RUN.
- C. ALL OSP CONDUITS SHALL BE INSTALLED WITH A SLIGHT DRAIN SLOPE (0.125 INCHES-PER-FOOT) AWAY FROM BUILDINGS TO PREVENT THE ACCUMULATION OF WATER IN THE CONDUIT OR INGRESS TO THE BUILDINGS.
- D. ALL DISTRIBUTION CONDUITS MUST BE BURIED A MINIMUM OF 24"-INCHES BELOW GRADE, WITH PREFERRED TOP OF CONDUIT DEPTH OF 36"-INCHES AND MARKER TAPE 12"-INCHES ABOVE THE TOP OF THE CONDUIT IF PLACED BY THE CONVENTIONAL TRENCHING METHOD.
- E. ALL CABLE SHALL BE INSTALLED IN THE LOWEST AVAILABLE CONDUIT IN A DUCT BANK, WORKING UP AS ADDITIONAL CABLES ARE INSTALLED.

0 2' 4'

1/4"=1'-0"

F. ALL OSP CONDUITS AND INNER-DUCT, USED AND SPARE, SHALL PLUGGED WITH WATERTIGHT PLUGS AT BOTH ENDS TO PREVENT THE INTRUSION OF WATER, GASSES, AND RODENTS THROUGHOUT THE CONSTRUCTION PROJECT. ALL OSP CONDUITS SHALL HAVE QUARTER 1/4)-INCH POLYPROPYLENE PULL ROPES INSTALLED. THE PULL ROPES MÚST BE RE-PULLED EACH TIME AN ADDITIONAL CABLE IS INSTALLED. ALI OSP CONDUITS MUST BE TESTED WITH A MANDREL TO PROVE COMPLIANCE WITH THE BEND RADIUS REQUIREMENTS THROUGHOUT THE CONDUIT RUN. WITHIN FIVE DAYS OF RELEASING THE CONDUIT FOR THE INSTALLATION OF CABLE, THE CONDUIT INSTALLATION CONTRACTOR SHALL PROVE ALL CONDUITS TO BE CLEAN AND DRY. UTILIZING MAXCELL REUSABLE TERMINATION BAGS IS THE PREFERRED METHOD FOR OCCUPIED DUCTS TO WATER SEAL. TYPICAL PLASTIC AND RUBBER EXPANSION PLUGS CAN BE USED FOR EMPTY DUCTS AND CONDUITS.

0 1' 2'

- G. IN NEW CONSTRUCTION AND NEW CONDUIT, FIBER OPTIC BACKBONE CABLES SHALL ALWAYS BE INSTALLED IN FIBER OPTIC INNER-DUCT. NORMALLY TO FOUR LOBED MAX-CELL TRACEABLE INNER-DUCTS CAN BE PLACED IN A FOUR (4)-INCH CONDUIT. WHERE FIBER-OPTIC CABLE IS INSTALLED INTO EXISTING CONDUITS, THE USE OF FIBER OPTIC INNER-DUCT IS PREFERRED IF SPACE IS AVAILABLE. INNER-DUCT IS USED TO SEPARATE AND SEGREGATE CABLES, AND TO PREVENT THE TANGLING OF CABLES IN A CONDUIT. TYPES OF TEXTILE INNER-DUCT, MAXCELL, ARE THE PREFERRED PRODUCT TO BE USED. OTHERWISE NEW CONDUIT SHALL BE INSTALLED TO MAINTAIN WORKING OSP SYSTEM.
- H. ALL PIPING AND CABLES WILL BE AFFIXED TO THE INTERIOR WALL AND LID IN EACH OSP VAULT AND PULL-BOX WITH APPROPRIATE WEATHER PROOF SELF-ADHESIVE LABELS THAT WILL TELL THE OWNER'S I.T. PERSONNEL WHICH BUILDINGS THE CABLING IS INSTALLED AND WHAT BUILDING IT IS GOING TO RESIDE. UTILIZE ANSI/TIA/EIA-606-A LABELING SCHEME.
- EVERY INDIVIDUAL INSTALLED PIPING WILL HAVE A NEPTCO TRACE-SAFE #RT1800W 19-GAUGE WATER BLOCKING ORANGE CONDUCTOR AND CONNECTORS AS NEEDED PULLED THROUGH IT FOR LOCATING PURPOSES. INSTALL TRACER LINE IN ALL OLD WORK IF NONE EXISTS.
- J. ALL TRENCHES AFTER PIPE HAS BEEN INSTALLED SHALL HAVE WARNING CAUTION TAPE OR RIBBON PLACED NO LESS THAN 12" ABOVE PIPING.
- K. ALL CABLE THAT ENTERS OR LEAVES THE PULL BOXES WILL HAVE NO LESS THAN A 12' FOOT SLACK LOOP IN EACH BOX OR VAULT. IT WILL BE MANAGED, ORGANIZED, LABELED AND SECURED ON THE WALL OF THE WITH PURPOSE BUILD SUPPORT RACKS AND RAILS TO ALLOW FREE ACCESS TO PULL BOX FOR FUTURE USE.
- TELECOMMUNICATIONS HAND-HOLES SHALL BE PLACED IN OUTSIDE PLANT CONDUIT RUNS AT AN INTERVAL NO GREATER THAN EVERY 500 FEET. CONDUITS ROUTING BETWEEN TWO TELECOMMUNICATIONS HAND-HOLES. OR BETWEEN A HAND-HOLE AND A BUILDING, SHALL CONTAIN NO MORE THAN TWO 90°SWEEPS OR A TOTAL OF 180°OF ŚWEEPS. IF ADDITIONAL CONDUIT SWEEPS ARE REQUIRED, PLACE ADDITIONAL HAND-HOLES AS NEEDED. TELECOMMUNICATIONS HAND-HOLES ARE TYPICALLY CONSTRUCTED IN PRE-FABRICATED CAST CONCRETE, TIER-15 RATING FOR WALL AND LID(S). TYPICAL HAND-HOLE SIZE SHALL BE 4'X4'X4'.
- 1. IF WALL SECTIONS MUST BE STACKED, THESE TELECOMMUNICATIONS HAND-HOLE SECTIONS MUST BE INSTALLED WITH A WATERTIGHT JOINT SEALER BETWEEN THE SECTIONS OF THE MANHOLE.
- 2. BARE EARTH FOR THE FLOOR OF A HAND-HOLE IS NOT ALLOWED. GRAVEL PACKED FLOOR PER MANUFACTURER, I.E. ARMORCAST.
- 3. TELECOMMUNICATIONS HAND-HOLES MUST CONTAIN CABLE RACKS FOR DRESSING AND SECURING CABLES THAT ROUTE THROUGH THE MANHOLE. FACH MUST CONTAIN STRUTS OR RAILS FOR INSTALLING CANTILEVER SUPPORT RACK ARMS PER HAND-HOLE WALL.
- 4. ALL METAL HARDWARE IN THE HAND-HOLE (RACKS AND LADDERS) MUST BE GROUNDED TO THE BONDING TABS PRE-CAST IN THE HAND-HOLE, WITH THE BONDING TABS BONDED TO THE GROUND ROD IF APPLICABLE
- 5. THE COVER OF ALL TELECOMMUNICATIONS MANHOLES MUST BE A MINIMUM OF ONE (1) INCH ABOVE THE FINISHED GRADE AFTER ALL LANDSCAPING IS COMPLETED. IF MANHOLES ARE LOCATED IN PAVED AREAS, THE PAVEMENT MUST BE TAPERED UP TO THE MANHOLE COVER.
- A. ALL CONCEALED WIRING IN BUILDING PERIMETER WALLS AND NON-ACCESSIBLE CEILINGS SHALL BE INSTALLED IN CONDUIT NOT TO EXCEED 40% FILL RATE. ALL WIRING IN ACCESSIBLE CEILINGS SPACES SHALL BE INSTALLED IN A PREDETERMINED AND DESIGNED PATHWAY CREATED USING A SUPPORT METHOD BY PANDUIT PRO J-HOOK, J-HOOK LIKE, TRAYS, BASKETS, AND LADDERS SECURELY FASTENED TO THE BUILDING STRUCTURE AT A MAXIMUM OF 5' FOOT INTERVALS. ALL CONCEALED WIRING IN BUILDING INTERIOR WALLS SHALL HAVE A MINIMUM OF 3/4" EMT WITH NYLON PULL STRING IN WALL CAVITY TO 6" INCHES INTO OR ABOVE ACCESSIBLE CEILING. PROVIDE PROTECTIVE BUSHING AT WALL STUD PENETRATIONS FOR BUILDING INTERIOR WALL INSTALLATIONS TO PREVENT THE CABLE FROM BEING IN CONTACT WITH THE SHARP EDGES BEFORE CABLE IS INSTALLED. WHERE PREMISE CABLE MAKES TRANSITION FROM CONDUIT TO ANOTHER METHOD, THE END OF THE CONDUIT SHALL HAVE AN INSULATING BUSHING TO PREVENT THE CABLE FROM BEING IN CONTACT WITH THE SHARP EDGES.
- B. INSTALL POLYETHYLENE FLAT PULL STRING WITH FOOTAGE MARKS WITH THE MINIMUM BREAKING STRENGTH OF 200-LB IN ONE PIPE OR SMALLER AND PULLING STRENGTH OF 1200-LB IN PIPE 1-1/4" AND LARGER.
- C. CABLES THAT PENETRATE FIRE—RATED WALLS SHALL BE FIRE AND SMOKE STOPPED WITH UL APPROVED METHODS AND MATERIALS SUITABLE FOR THE RE-ENTERABLE PENETRATION:
- 1. APPROVED MANUFACTURERS:
- a. SPECIFIED TECHNOLOGIES INC. EZ-PATH SERIES
- b. SPECIFIED TECHNOLOGIES INC. EZ-PATH FIRESTOP GROMMET
- c. WIREMOLD/LEGRAND FLAME STOPPER FS SERIES
- d. HILTI CORP. FIRESTOP SLEEVE CP 653 e. SUBSTITUTIONS: PERMITTED
- D. INSTALL ALL CONDUCTORS, CONNECTIONS, AND DEVICES IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE OR AHJ.
- E. PATHWAYS BETWEEN TR, ER, AND EF SHALL HAVE A MINIMUM OF TWO (2) 2" INCH RACEWAYS FOR UTP DATA STATION CABLING AND (2) 4" INCH RACEWAY DEDICATED FOR ACCESS CONTROL CABLING. QUANTITY DETERMINED BY FILL AND FUTURE WORK.
- F. ALL CORE-DRILLED HOLES THROUGH FLOORS AND PENETRATIONS THROUGH FIRE WALLS SHALL BE SLEEVED AND THE CORRECT FITTINGS WILL BE PLACED AT BOTH ENDS OF THE PIPE FOR PROTECTING THE CABLE.
- G. ALL COMPONENTS WILL MEET OR EXCEED ANSI/TIA/EIA-569-B STANDARDS
- H. FOR POWER SYSTEMS OPERATING AT 480V OR GREATER, INCLUDING ELECTRICAL DISTRIBUTION PANELS, STEP DOWN DEVICES OR TRANSFORMERS, MAINTAIN A MINIMUM SEPARATION DISTANCE OF 6 M (20 FT.) FROM ALL TELECOMMUNICATIONS CROSS-CONNECTS.
- FOR POWER SYSTEMS OPERATING AT 480V OR GREATER. MAINTAIN A MINIMUM SEPARATION DISTANCE OF 10' FEET (3-METERS) FROM ALL TELECOMMUNICATIONS CABLING. PATHWAYS SHOULD CROSS PERPENDICULAR TO ELECTRICAL POWER CABLES OR CONDUITS.
- J. FOR LARGE ELECTRICAL MOTORS OR TRANSFORMERS, MAINTAIN A MINIMUM SEPARATION DISTANCE OF 4' FEET (1.2-METERS) FROM ALL TELECOMMUNICATIONS CABLING.
- K. FOR LIGHTNING PROTECTION SYSTEM CONDUCTORS (NEC 800-13). MAINTAIN A MINIMUM SEPARATION DISTANCE OF 6' FEET (1.8-METERS) FROM ALL TELECOMMUNICATIONS CABLING.
- FOR POWER SYSTEMS OPERATING AT LESS THAN 480V, INCLUDING ALL CONDUIT AND CABLES USED FOR ELECTRICAL POWER DISTRIBUTION. MAINTAIN A MINIMUM SEPARATION DISTANCE OF 2' FEET (0.6-METERS) FROM ALL TELECOMMUNICATIONS CABLING. PATHWAYS SHOULD CROSS PERPENDICULAR TO ELECTRICAL POWER CABLES OR CONDUITS.
- M. FOR FLUORESCENT LIGHTING, MAINTAIN A MINIMUM SEPARATION DISTANCE OF 5" INCHES (12-CM) FROM ALL TELECOMMUNICATIONS CABLING. PATHWAYS SHOULD CROSS PERPENDICULAR TO FLUORESCENT LIGHTING.

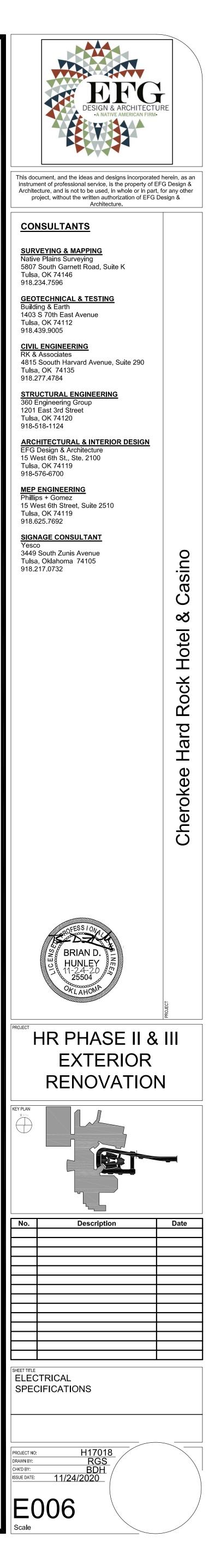
N. FOR BRANCH CIRCUITS (SECONDARY) POWER (120/240V, 20A) WHERE ELECTRIC LIGHT OR POWER CIRCUITS COEXIST WITH TELECOMMUNICATIONS CABLING, MAINTAIN A MINIMUM SEPARATION DISTANCE OF 2" INCHES (0.50 MM).

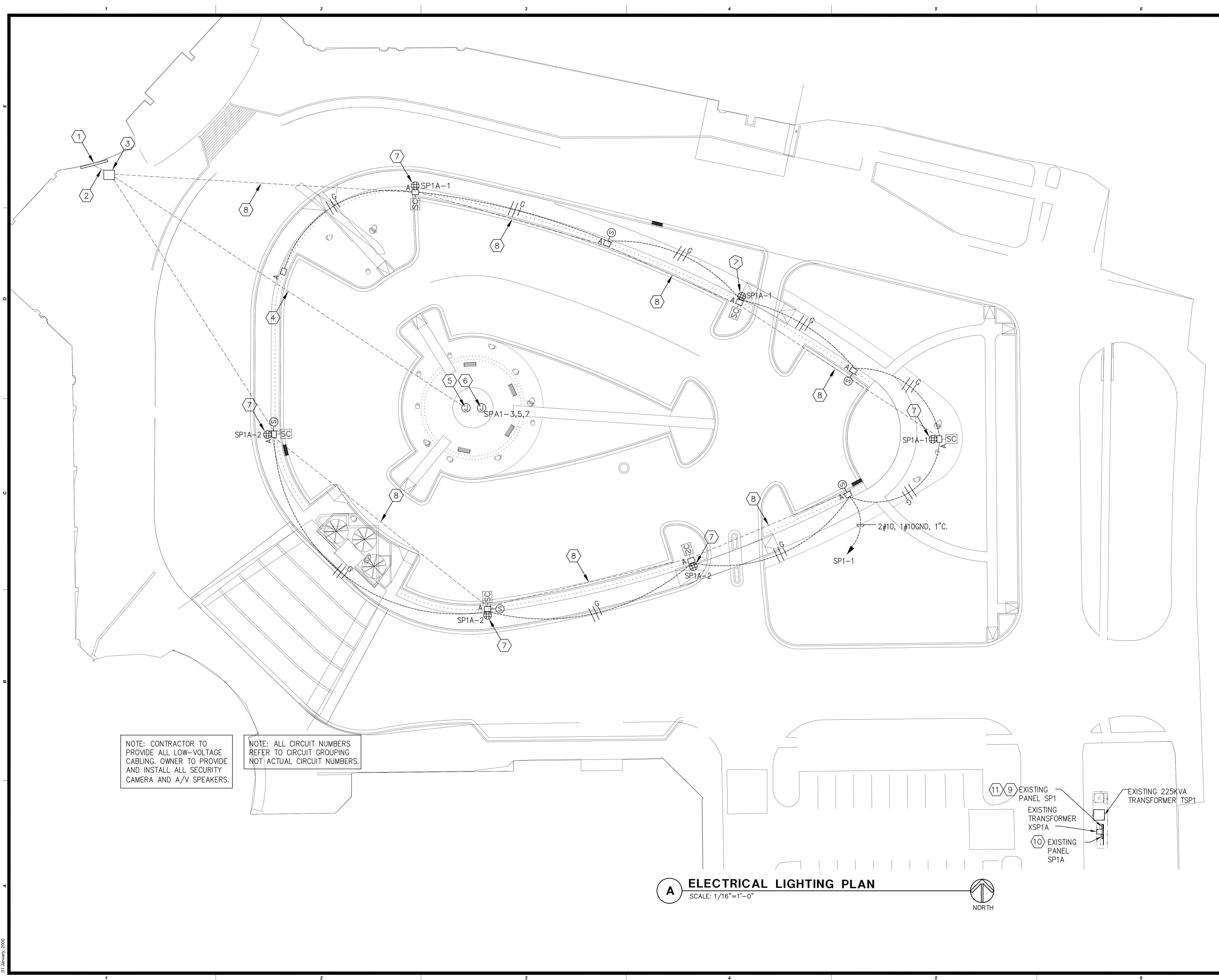
3.6 TESTING

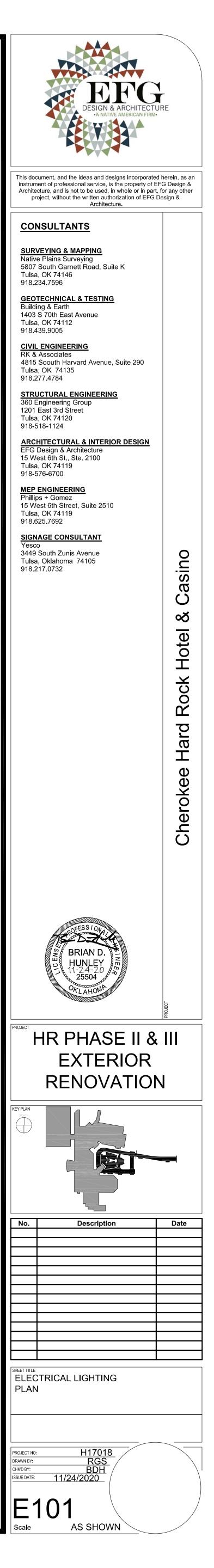
- A. TESTING OF COPPER CABLING SHALL BE PERFORMED PRIOR TO COMPLETION OF THE WORK AND PROJECT CLOSEOUT. ONE HUNDRED (100%) PERCENT OF THE COPPER BACKBONE AND HORIZONTAL WIRING PAIRS SHALL B TESTED FOR OPENS SHORTS, CORRECT POLARITY, PAIR TRANSPOSITION, AND PRESENCE OF A/C VOLTAGE WITH FLUKE NETWORKS OR EQUIVALENT CERTIFYING TESTER. VOICE AND DATA HORIZONTAL WIRING LINK SHALL BE TESTED FROM THE WAO TO THE TR. THE NETWORKING STRUCTURED CABLING SYSTEM WILL BE TESTED FOR CONFORMANCE TO THE SPECIFICATIONS OF ANSI/TIA-568-C.2 CATEGORY 6 PERMANENT LINK. THE I SHALL INCLUDE MUTUAL CAPACITANCE, CHARACTERISTIC IMPEDANCE, ATTENUATION, NEAR-END CROSS TALK, AND RESISTANCE.
- ALL FIBER OPTIC CABLE MUST BE VISUALLY INSPECTED AND OPTICALLY TESTED ON THE REEL UPON DELIVERY TO THE INSTALLATION SITE. USING AN OPTICAL TIME DOMAIN REFLECTOMETER (OTDR), AN ACCESS JUMPER WITH LIKE FIBER, A PIGTAIL, AND A MECHANICAL SPLICE, ALL FIBERS SHALL BE TESTED FOR CONTINUITY AND ATTENUATION. TESTING FOR CONTINUITY AND ATTENUATION ON THE BULK CABLE REEL MUST CONFIRM FACTORY SPECIFICATIONS TO ENSURE THAT THE FIBER OPTIC CABLE WAS NOT DAMAGED DURING SHIPMENT. THE TEST RESULTS MUST MATCH THE RESULTS OF THE FACTORY-ATTACHED TAG ON THE REEL, OR THE FIBER SHALL NOT BE USED. REEL DATA SHEET MUST BE PROVIDED SHOWING TEST RESULTS.
- C. END-TO-END OTDR AND OTLS TEST MEASUREMENTS SHALL BE PROVIDED FOR OS1 SINGLE-MODE AND OM4 MULTIMODE OPTICAL FIBERS (2 WAVE LENGTHS PER TEST ARE REQUIRED PER FIBER TYPE) PER ANSI/TIA-568-C.3 STANDARD. TEST RESULTS MUST BE SUBMITTED FOR REVIÉW AS PART OF THE INSTALLATION INSPECTION REQUIREMENTS. TEST RESULTS SHALL BE IN PAPER AND ELECTRONIC FORM, AND MUST CONTAIN THE NAMES AND SIGNATURES OF THE TECHNICIANS PERFORMING THE TESTS.
- D. OPTICAL FIBERS MUST BE CERTIFIED, TESTED, RATED AND GUARANTEED FOR A MINIMUM PERFORMANCE OF GIGABIT ETHERNET TRANSMISSION OVER FIBER (1000BASE-X) AND MAXIMUM OF 10 GIGABIT ETHERNET (10GBASE-X). ADDITIONALLY, ALL FIBER OPTIC CABLE LINKS MUST PASS ALL INSTALLATION AND PERFORMANCE TESTS BOTH RECOMMENDED AND MANDATED BY THE CABLE MANUFACTURER.
- RECORDS OF ALL TESTS SHALL BE COMPILED ONTO COMPACT DISC OR PORTABLE MEDIA AND SUBMITTED TO THE OWNER UPON COMPLETION OF THE WORK. THE TEST RESULTS SUMMARY, RAW TEST FILE, CSV, AND PDF VERSIONS MUST BE SUBMITTED (E.G. FLUKE NETWORKS LINK WARE) AS PER THE MANUFACTURER'S WARRANTY SUBMITTAL PROCEDURE DEFINES. TEST RESULTS MAY BE ELECTRONICALLY SUBMITTED DIRECTLY SUBMITTED TO THE OWNER'S I.T. DEPARTMENT. A FINALIZED REPORT WITH ALL RECORD DRAWINGS, WARRANTY AND TEST RESULTS WILL BE SUBMITTED TO THE OWNER'S I.T. DEPARTMENT IN AN ORGANIZED 3-RING BINDER. THE REPORT WILL BE SUBMITTED WITH SECTIONS DEFINED WITHIN A TABLE OF CONTENTS MATCHING THE TABBED SECTIONS. SEE DIVISION 1 "GENERAL **REQUIREMENTS**".
- THE OPTICAL FIBER MANUFACTURER WARRANTY MUST BE REGISTERED WITH CORNING CABLING SYSTEMS OR APPROVED SUPPLIER SEPARATELY BY THE SAME LOW-VOLTAGE CONTRACTOR FOR THE COPPER STRUCTURED CABLING
- 3.7 OPTICAL FIBER AND COPPER SPLICES
- A. THE SPLICING OF OPTICAL FIBER CABLE SHALL ONLY BE ALLOWED TO TERMINATE FACTORY PIGTAIL CONNECTORS AND RIBBON CABLES CONNECTORS.
- COPPER COUNT SPLICES SHALL UTILIZE 710 SPLICE METHOD CONNECTIONS PER THE CONDITION.
- TELECOM SPLICE CANISTERS WILL BE FROM PREFORMED ARMADILLO STAINLESS STEEL MODELS AND JELLY FILLED TO FACTORY PRESSURE ONCE ALL OF THE MULTI-PAIR CABLE HAS BEEN CERTIFIED FOR PRECISION AND ACCURACY IN BEING IDENTIFYING AND LABELED.
- 3.8 TRASH AND MATERIALS
- A. TRASH WILL BE KEPT CLEARED FROM THE WORK AREAS DAILY.
- 3.9 SALVAGE MATERIALS
- A. REMOVE AND RECYCLE UNUSED, UNDOCUMENTED AND OTHERWISE "ABANDONED" CABLES PRIOR TO THE COMPLETION OF THE PROJECT.
- B. "ABANDONED CABLE" IS DEFINED PER NEC 2008 ARTICLES: 640, 645, 725, 760, 770, 800, 820 AND 830. FURTHER DEFINITION IS CONTAINED IN NFPA-75, NFPA-76 AND NFPA-90A.
- C. DISCONNECT ABANDONED TELECOMMUNICATIONS OUTLETS, WORK AREAS AND REMOVE DEVICES.
- D. REMOVE CABLING AND COMMUNICATIONS DEVICES IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.
- E. PROVIDE BLANK COVER FOR ABANDONED TELECOMMUNICATIONS OUTLET AND WORK AREA BOXES THAT ARE NOT REMOVED.
- F. SCHEDULE WORK WITH OWNER AND OTHER CONTRACTORS.
- G. IF SALVAGED MATERIALS ARE TO BE RE-USED OR OTHERWISE RETURNED TO THE OWNER, MAKE SURE THE ITEMS TO BE REMOVED FROM SERVICE AND TURNED OVER TO THE OWNER ARE IDENTIFIED ON THE DRAWINGS.
- H. EXCEPT WHERE NOTED ON THE PROJECT DRAWINGS, MATERIALS REMOVED SHALL BECOME THE PROPERTY OF AND SHALL BE DISPOSED/RECYCLED BY THE CONTRACTOR
- I. MAINTAIN MATERIALS AND EQUIPMENT TO BE TURNED OVER TO THE OWNER AND/OR REUSED IN CONDITION EQUAL TO THAT EXISTING BEFORE WORK BEGAN. REPAIR OR REPLACE MATERIALS OR EQUIPMENT DAMAGED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

1/2"=1'-0"

B. MATERIALS WILL BE KEPT IN A NEAT AND WORKMANSHIP LIKE MANNER.









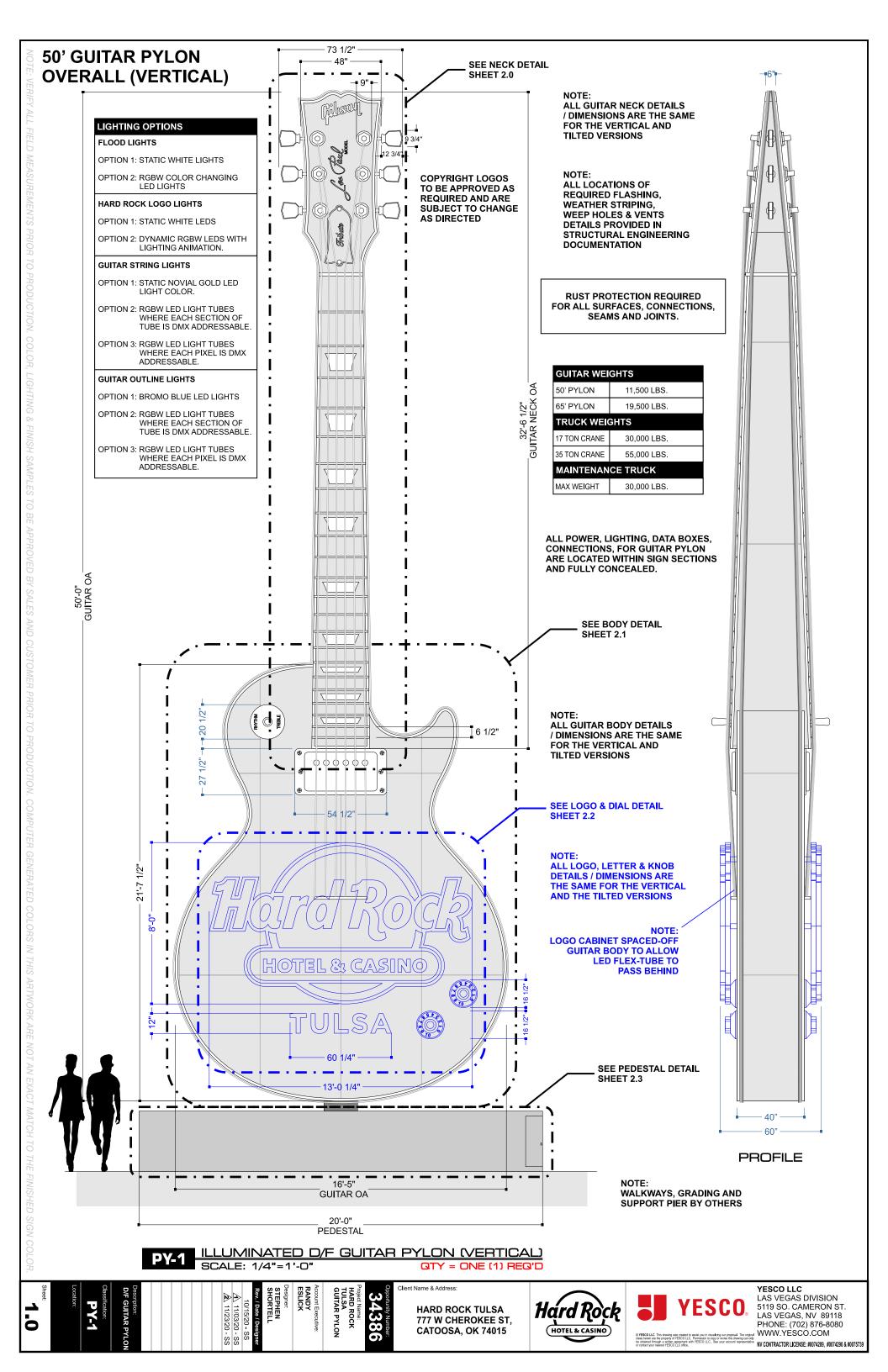
50' ILLUMINATED D/F GUITAR PYLON (VERTICAL & TILTED)

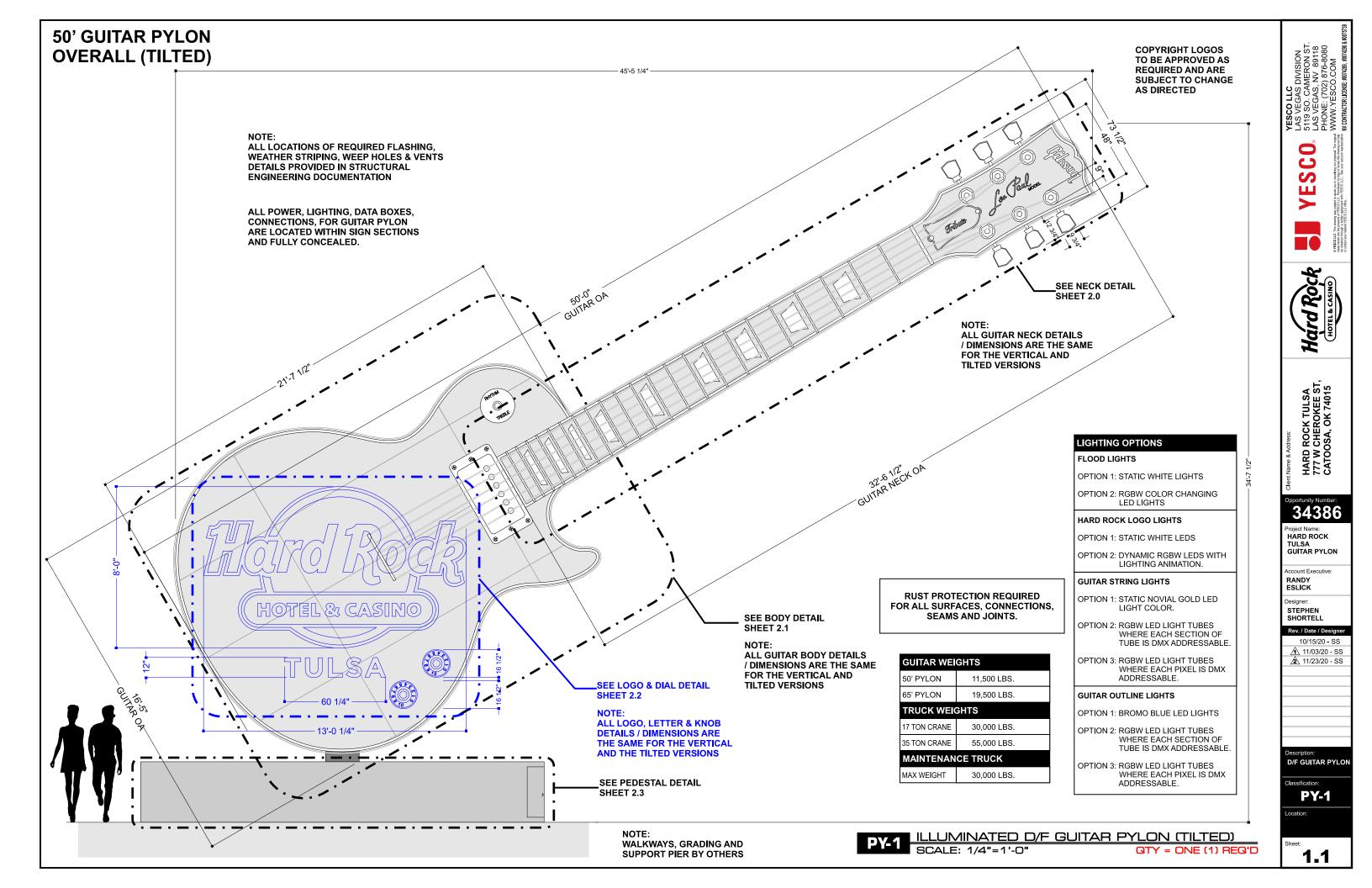
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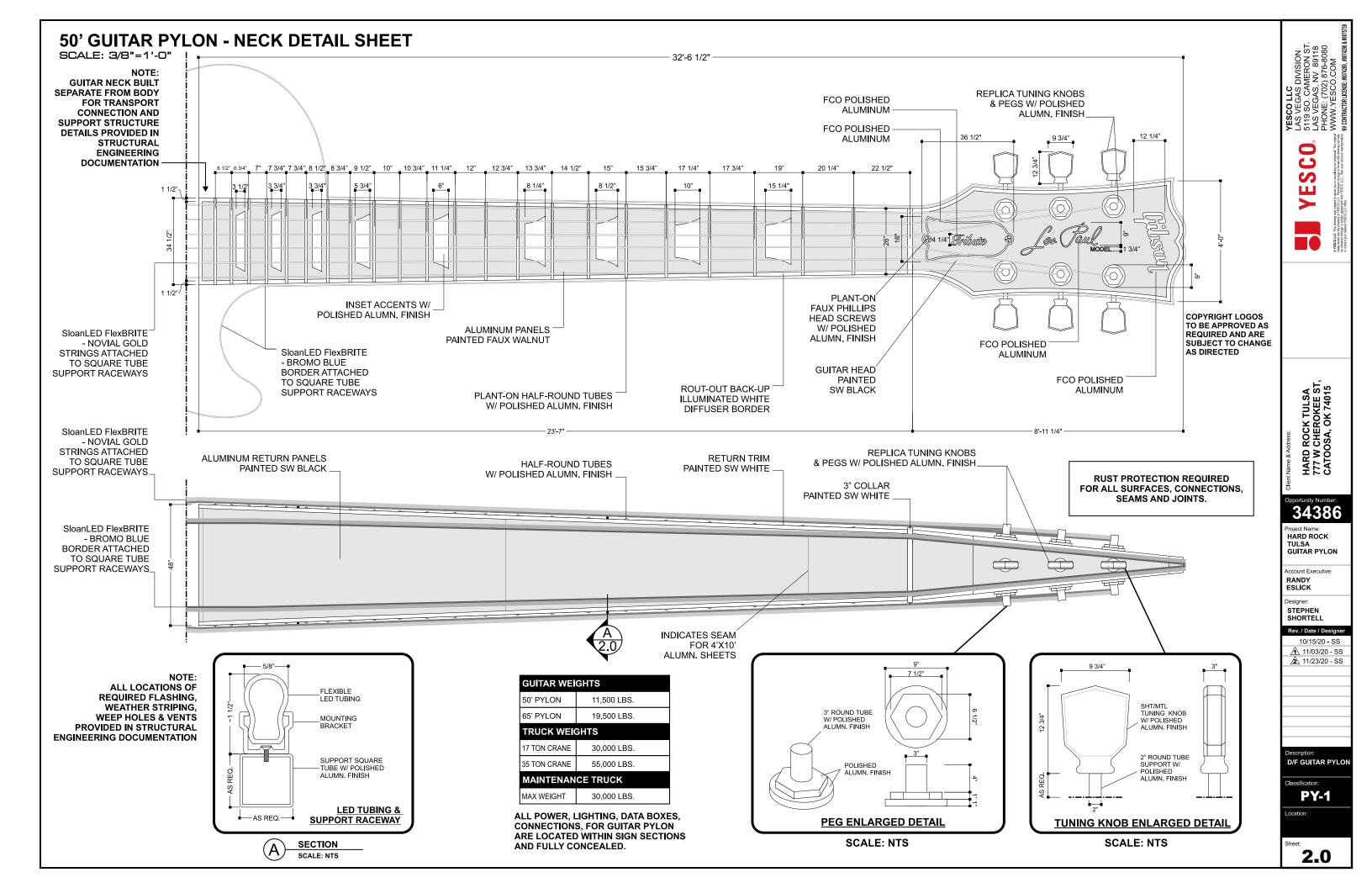


NOTE: VERIFY ALL FIELD MEASUREMENTS PRIOR TO PRODUCTION. COLOR, LIGHTING & FINISH SAMPLES TO BE APPROVED BY SALES AND CUSTOMER PRIOR TO PRODUCTION. COMPUTER GENERATED COLORS IN THIS ARTWC

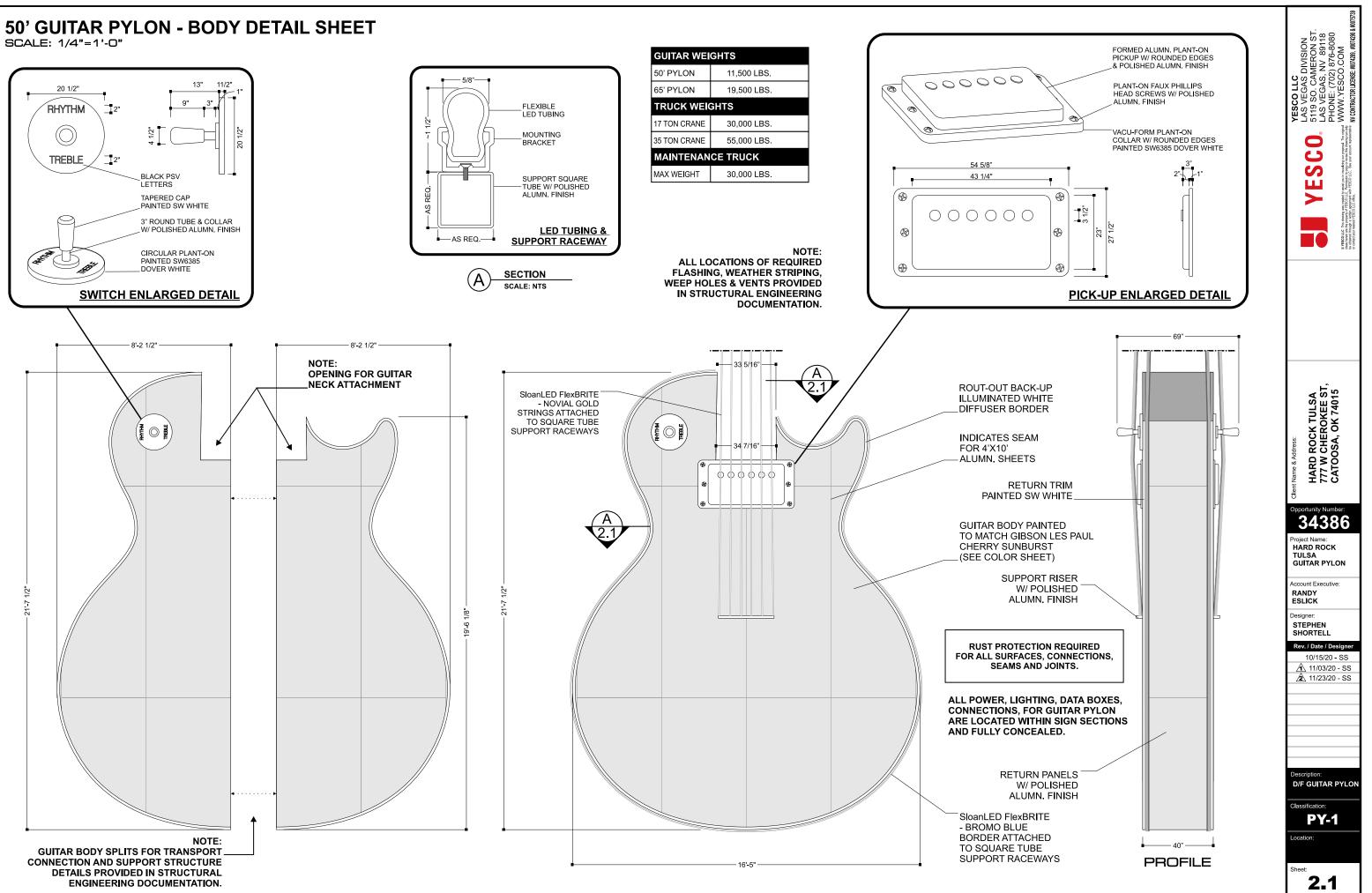


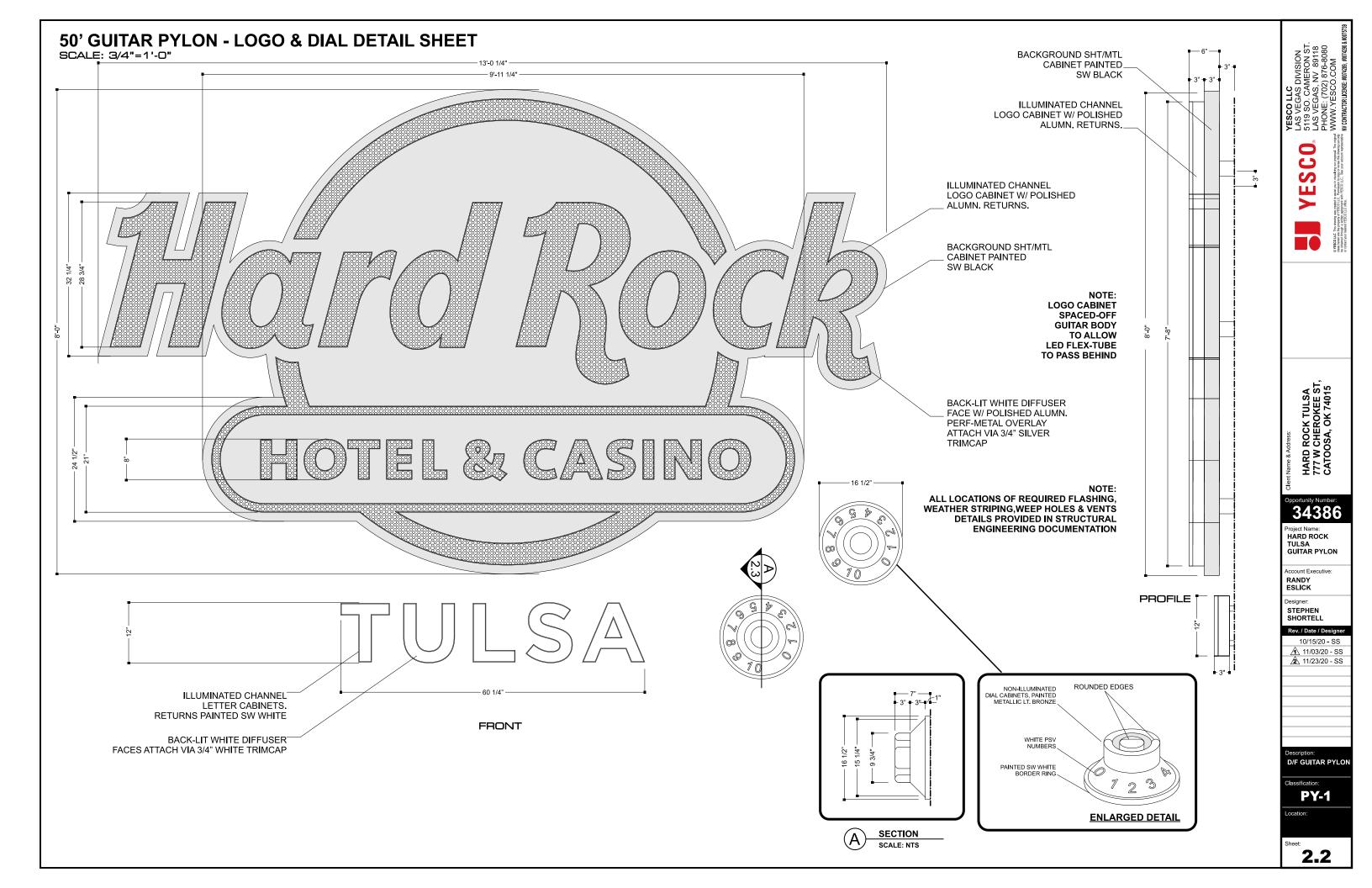


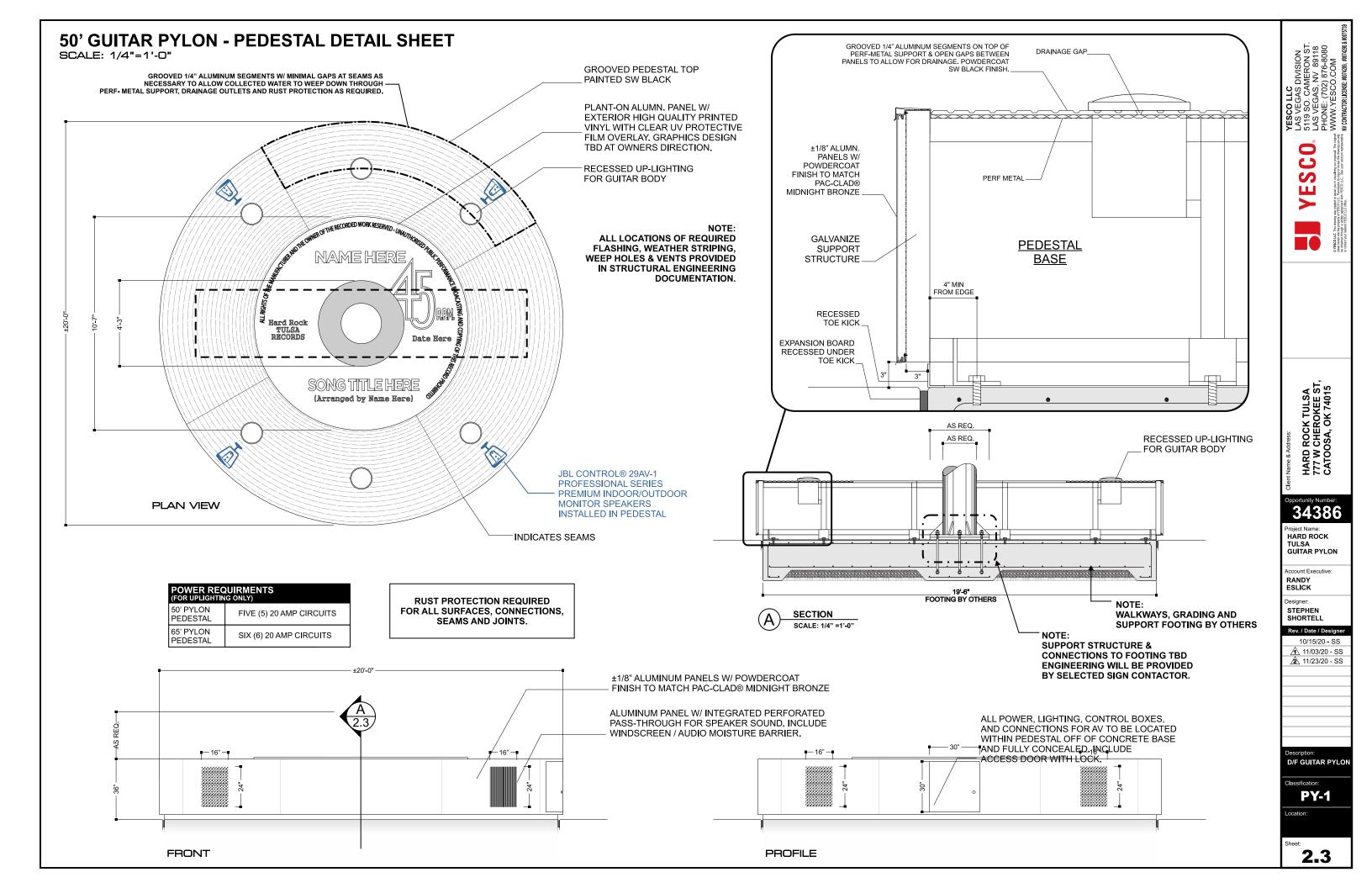






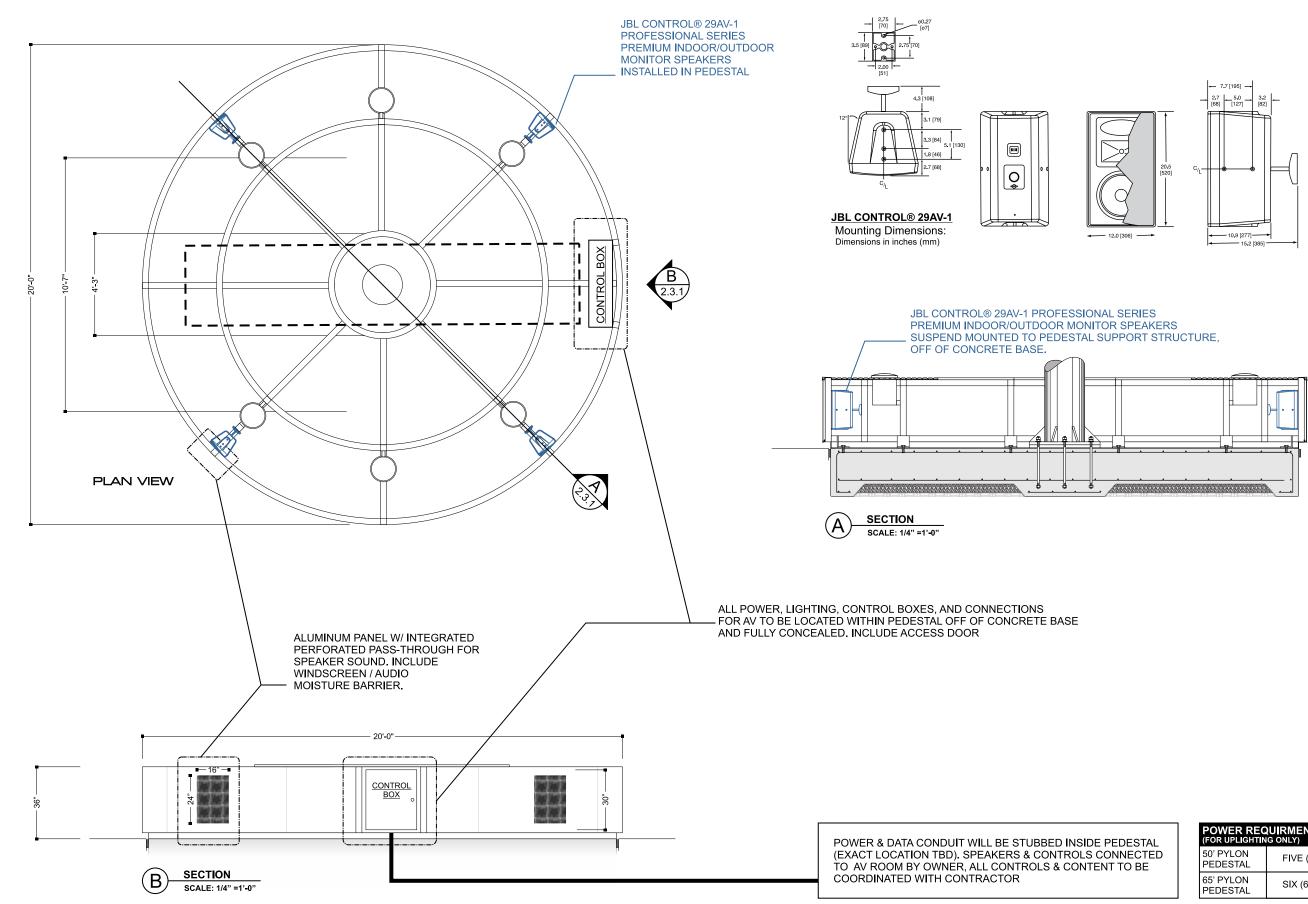






50' GUITAR PYLON - PEDESTAL DETAIL SHEET

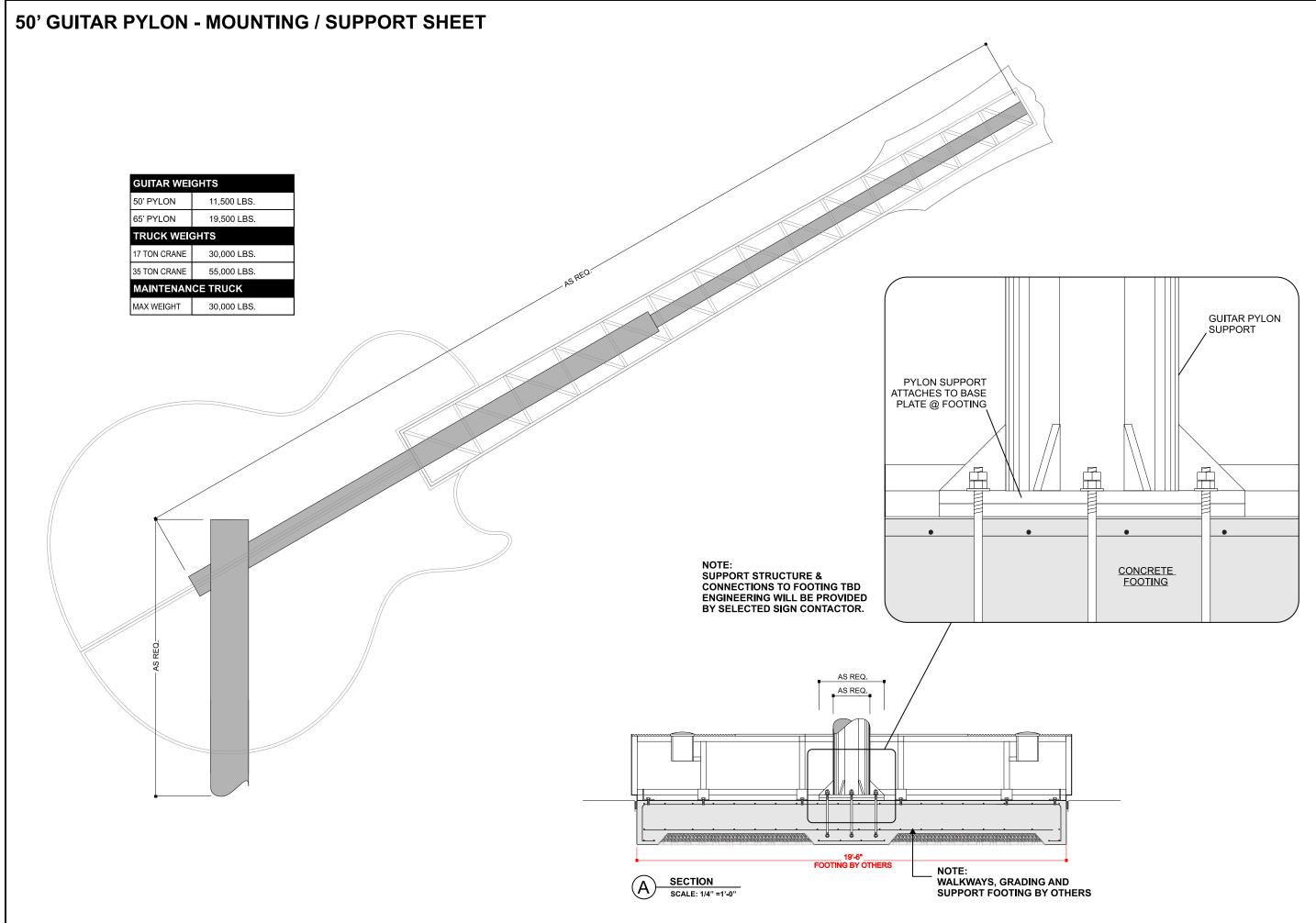
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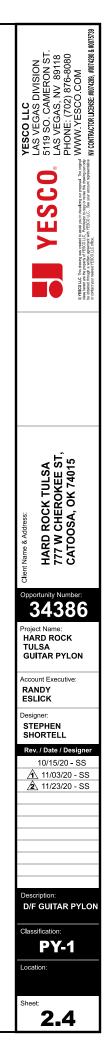


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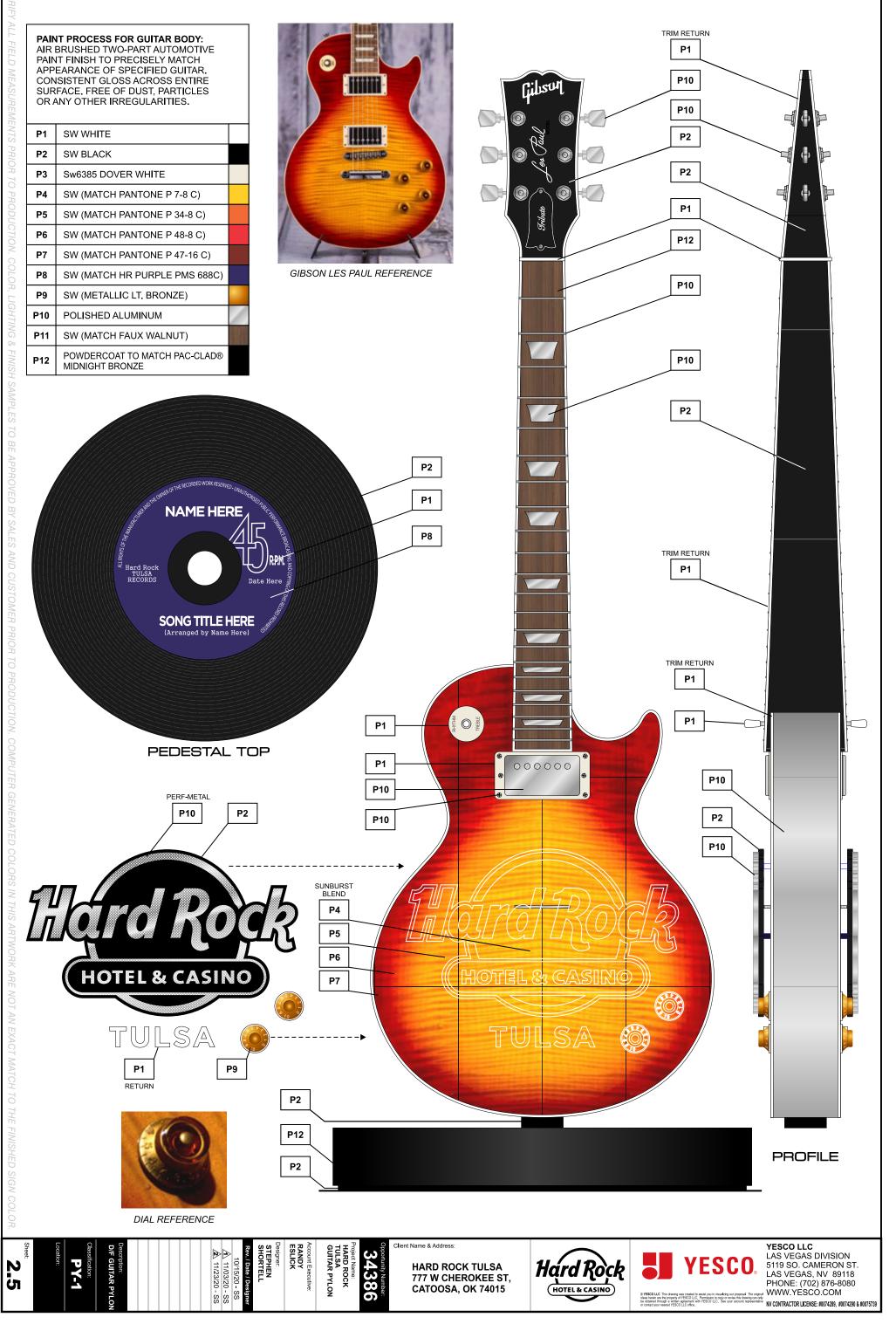
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	POWER REQUIRMENTS (FOR UPLIGHTING ONLY)			
50' PYLON PEDESTAL	FIVE (5) 20 AMP CIRCUITS			
65' PYLON PEDESTAL	SIX (6) 20 AMP CIRCUITS			





50' GUITAR PYLON COLOR SHEET (VERTICAL& TILTED)













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2.6



65' ILLUMINATED D/F GUITAR PYLON (VERTICAL & TILTED)

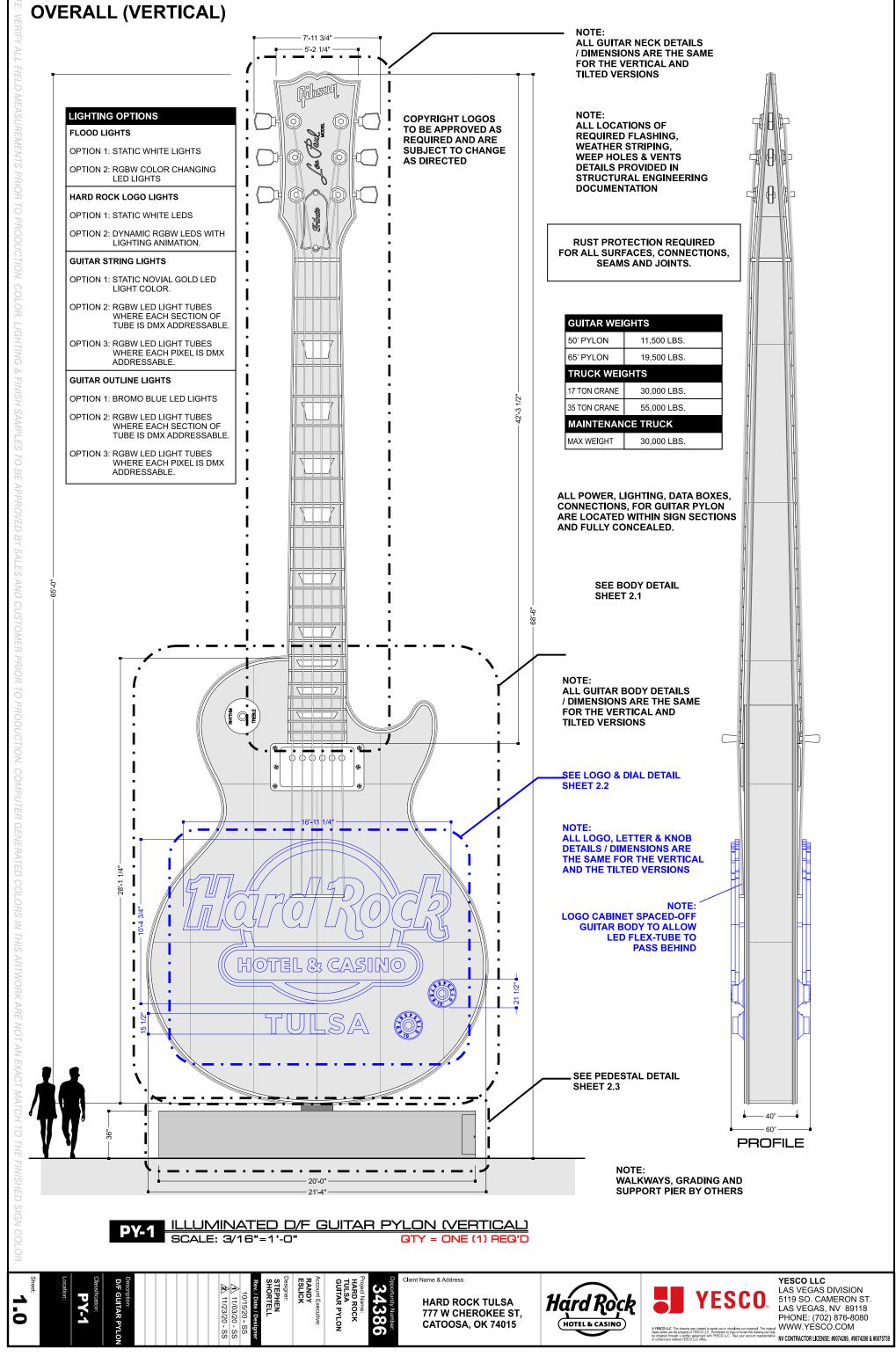
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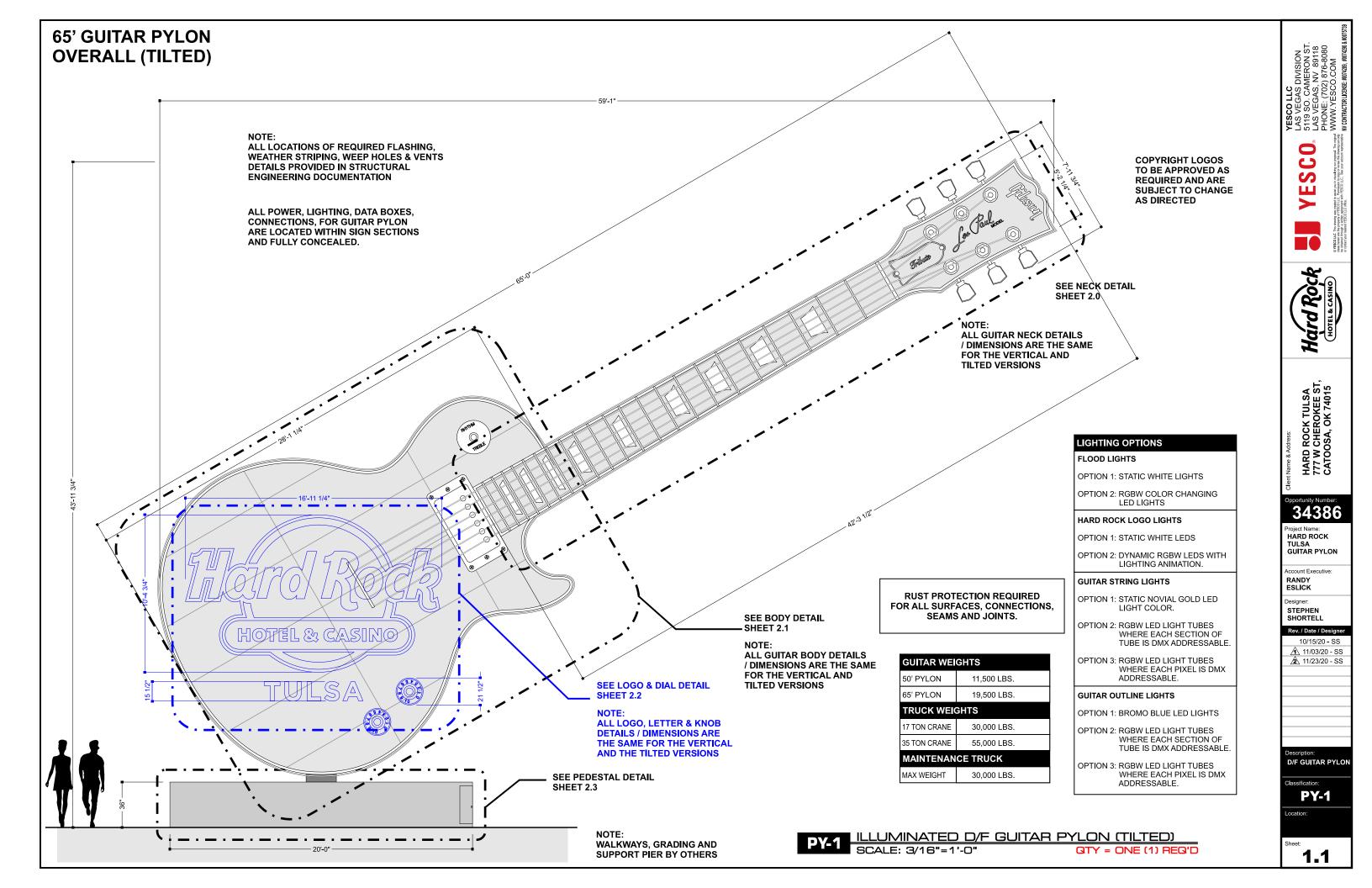


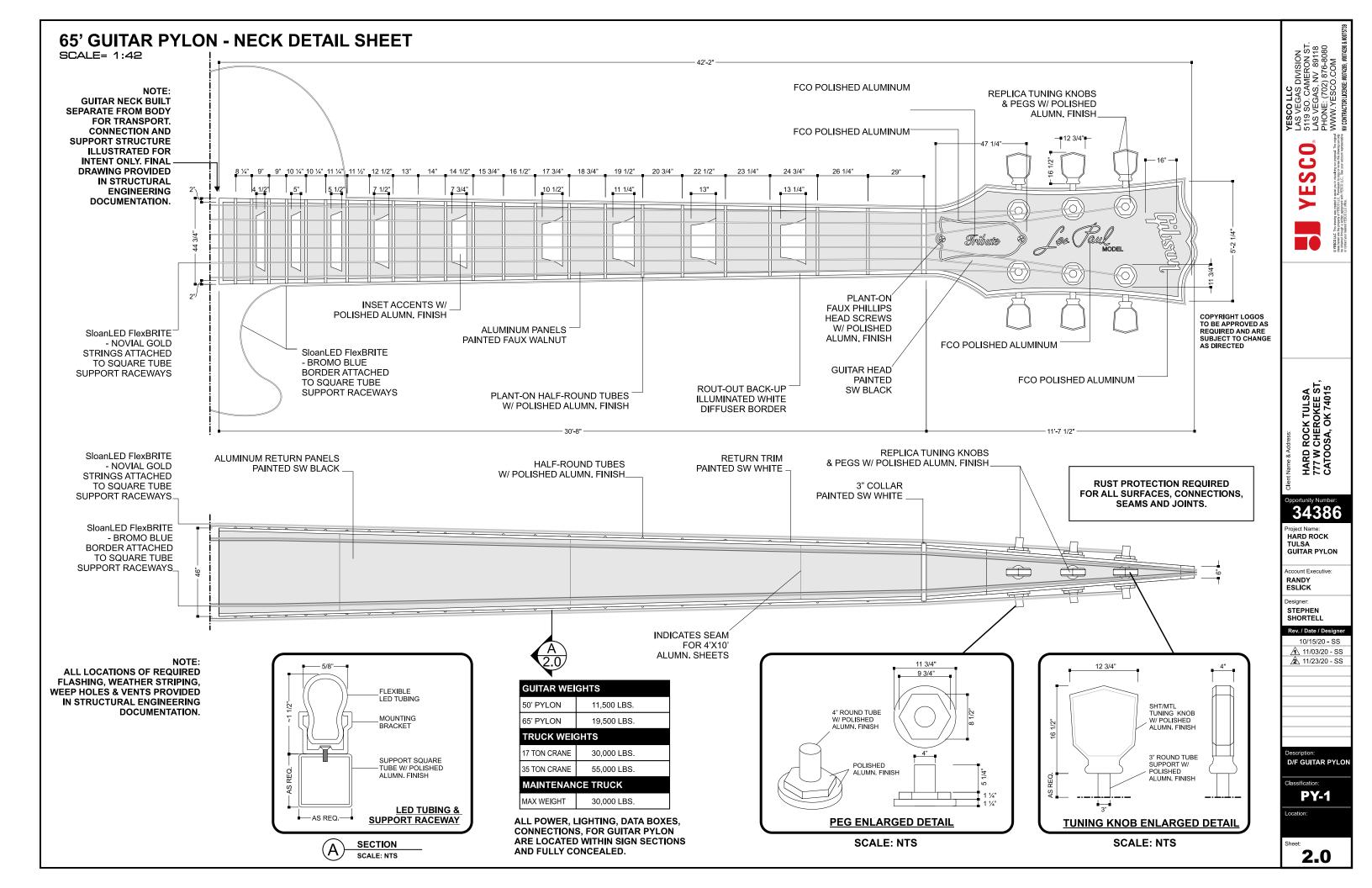
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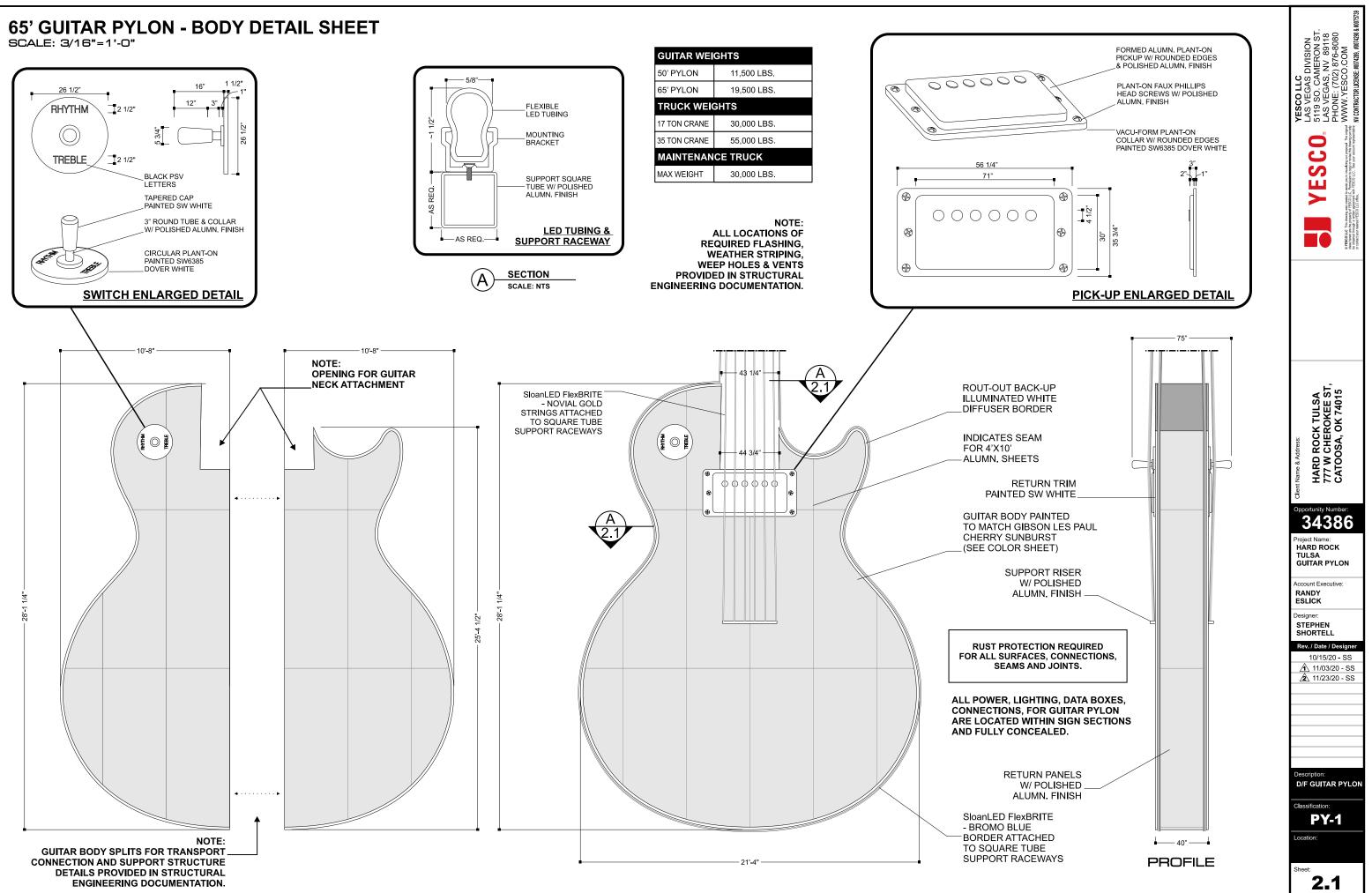


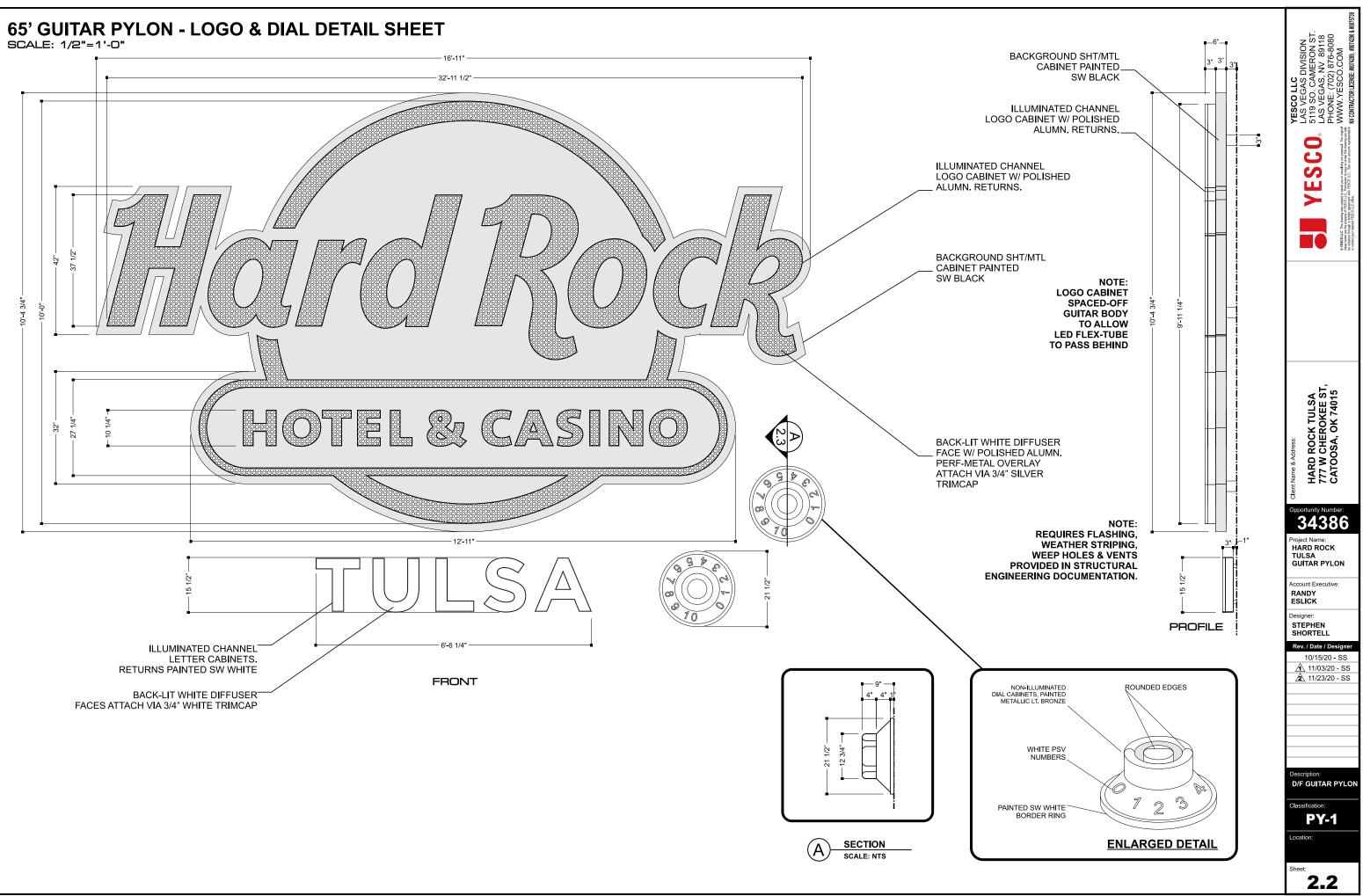
65' GUITAR PYLON

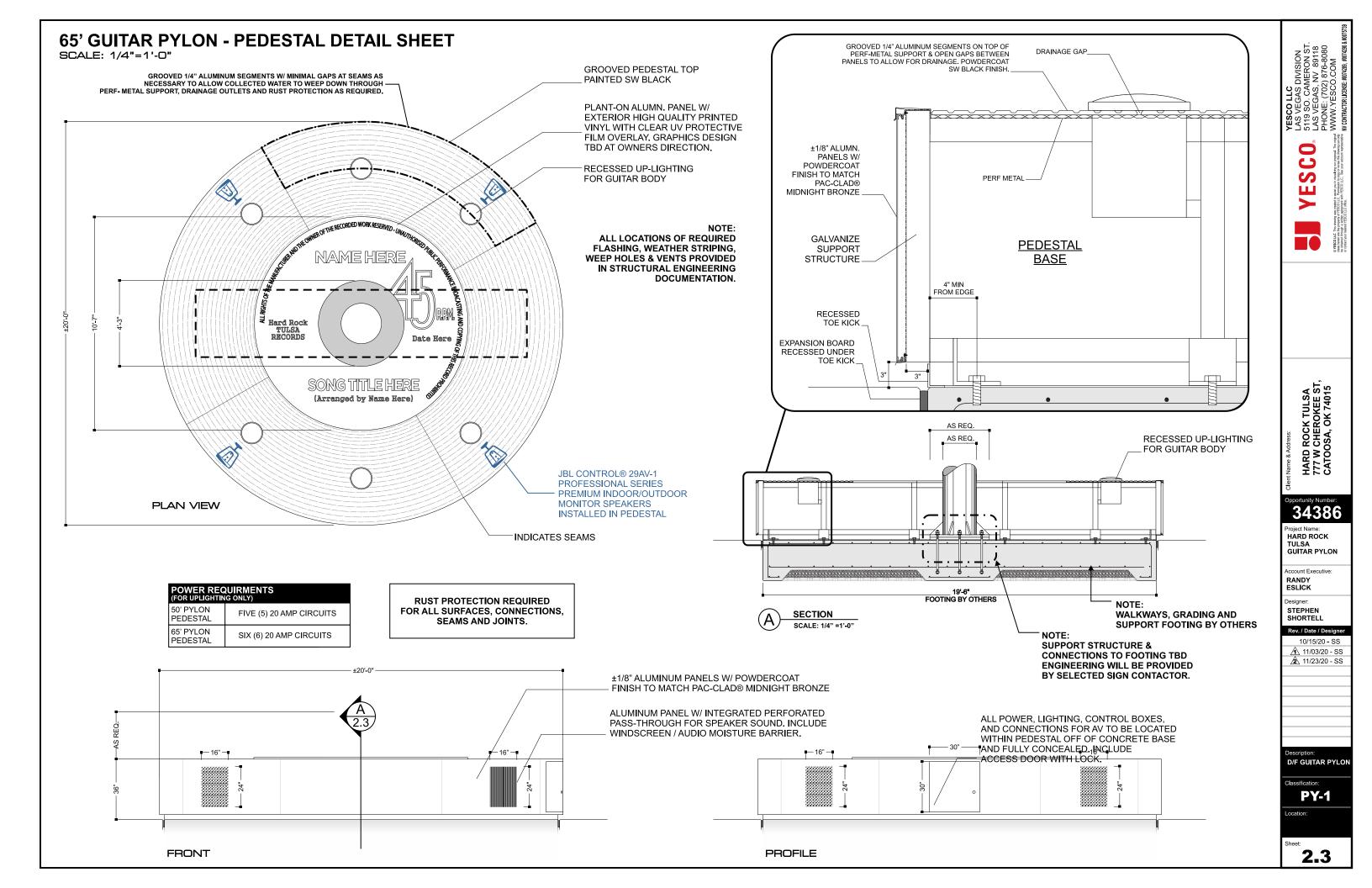






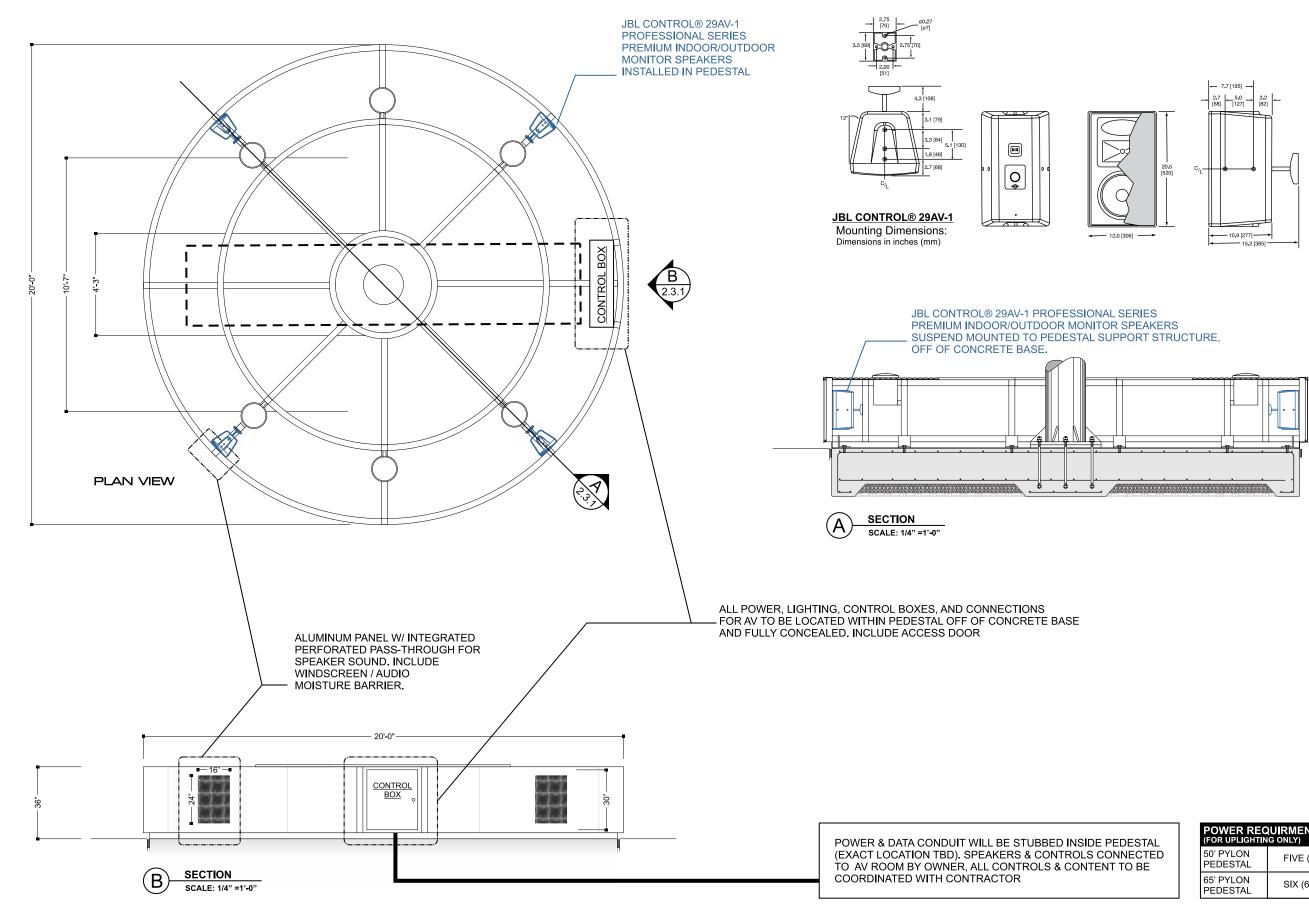






65' GUITAR PYLON - PEDESTAL DETAIL SHEET

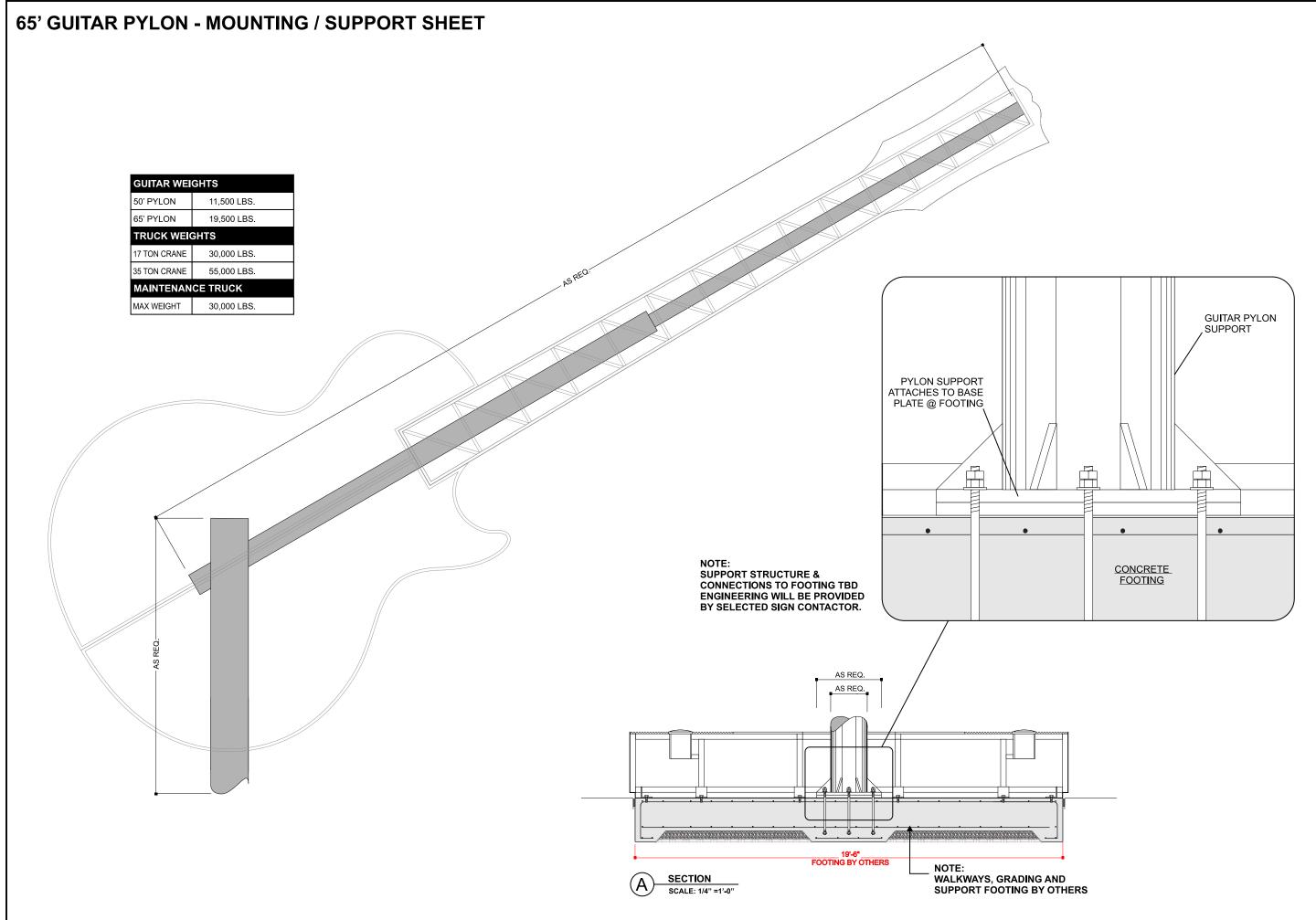
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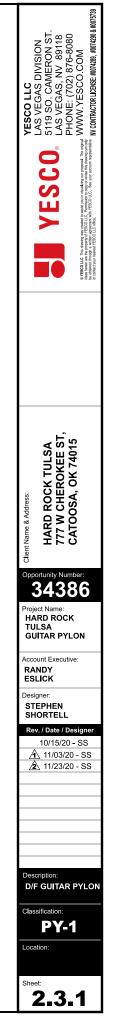


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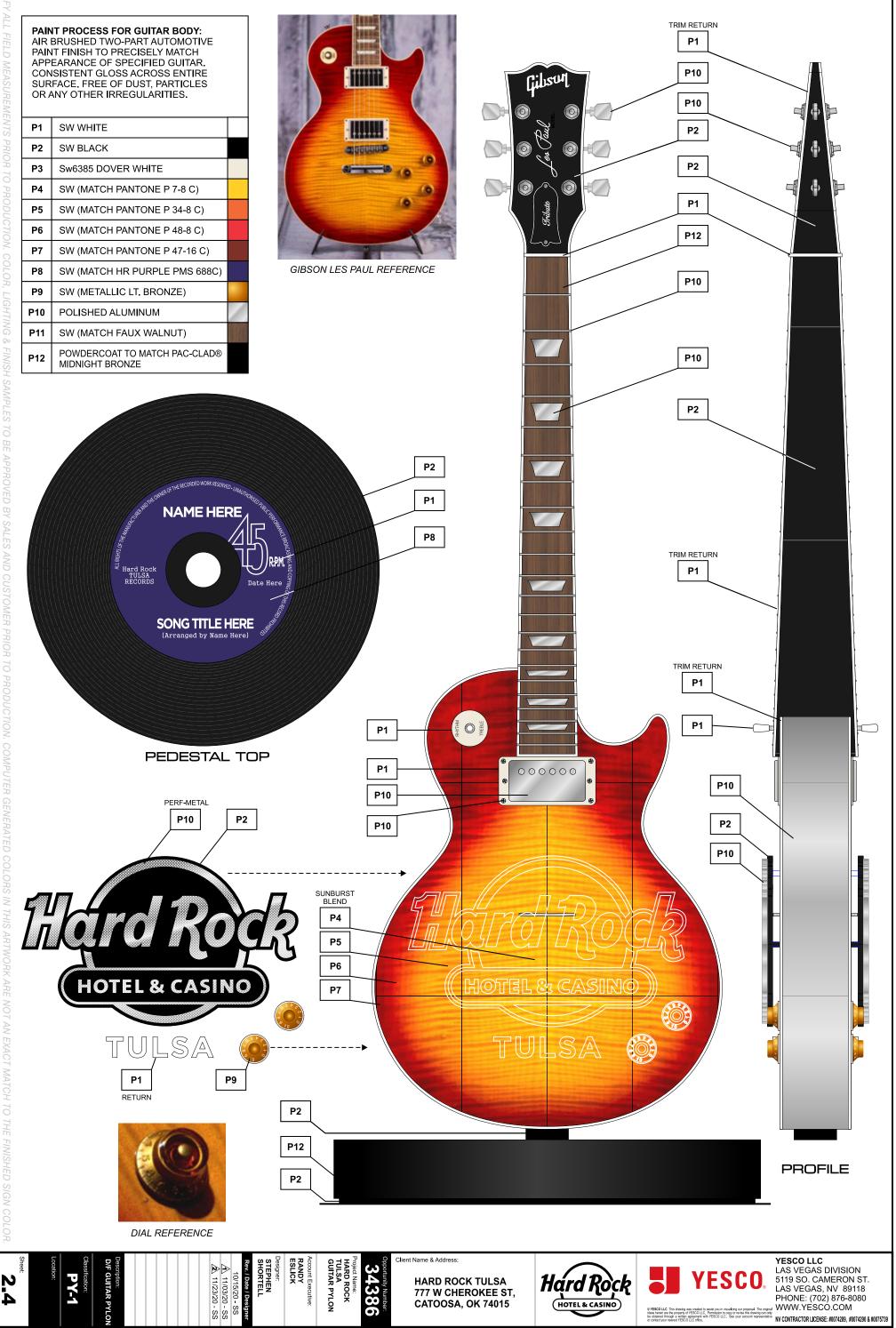
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POWER REQUIRMENTS (FOR UPLIGHTING ONLY)		
50' PYLON PEDESTAL	FIVE (5) 20 AMP CIRCUITS	
65' PYLON PEDESTAI	SIX (6) 20 AMP CIRCUITS	





65' GUITAR PYLON COLOR SHEET (VERTICAL& TILTED)













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2.5