

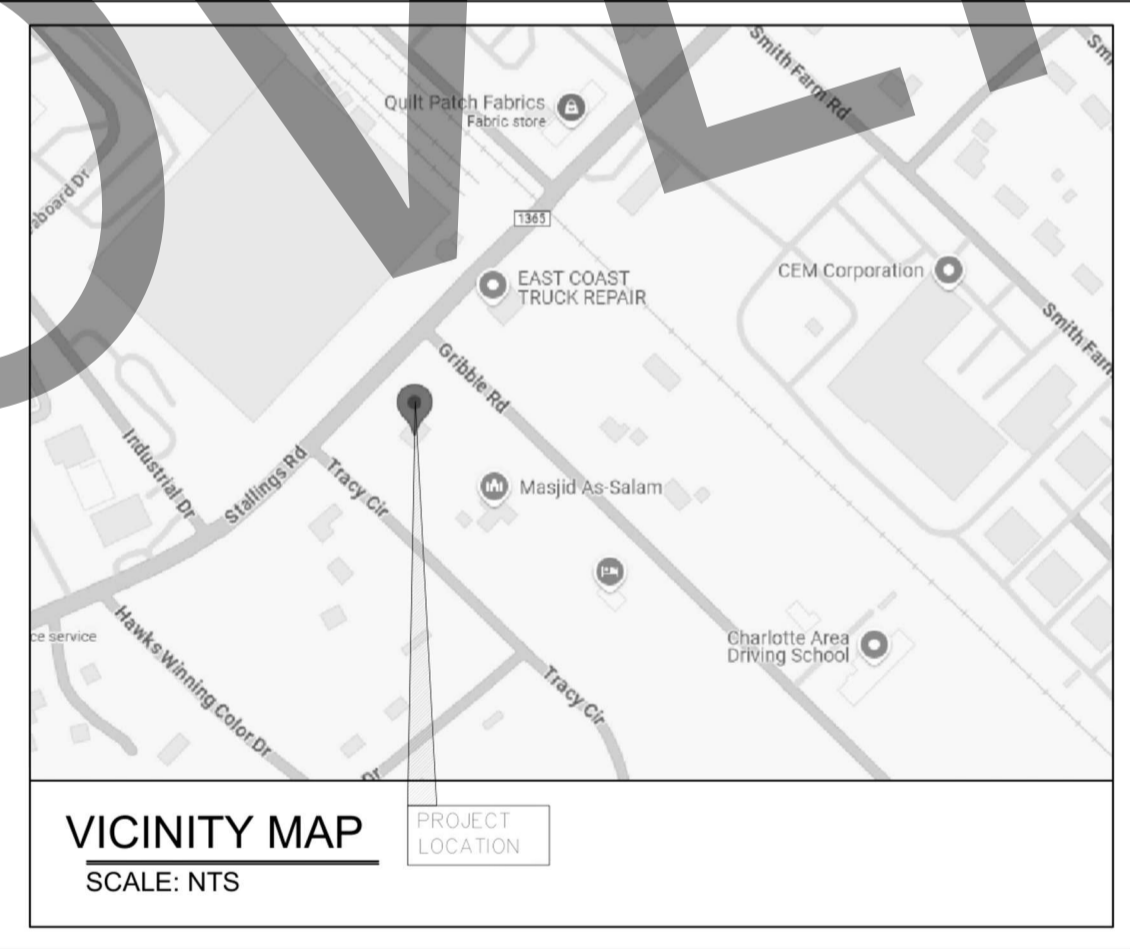


PROPOSED CIVIL DESIGN CONSTRUCTION PLANS
TO SERVE

JLN SPORTS AND GAMES LLC

824 STALLINGS ROAD
STALLINGS, NC 28104

OCTOBER 2024



INDEX OF DRAWINGS	SHEET NO.
COVER SHEET	C0
TOPOGRAPHIC SURVEY	
PROPOSED SITE DIMENSION AND LANDSCAPE PLAN	C1
EXISTING SITE GRADING AND STORMWATER CALCULATIONS	C2
PROPOSED SITE GRADING AND STORMWATER DETENTION CALCULATIONS	C3
PROPOSED SITE GRADING AND DRAINAGE PLAN	C4
STORMWATER POLLUTION AND PREVENTION PLAN	C5
SITE UTILITIES PLAN	C6
DRIVEWAY AND SWEEP PATH ANALYSIS	C7
CONSTRUCTION DETAILS – TRUE GRID GRAVEL FILL INSTALLATION	C8

REVISIONS

JLN SPORTS AND GAMES LLC
824 STALLINGS ROAD, STALLINGS,
NC 28104

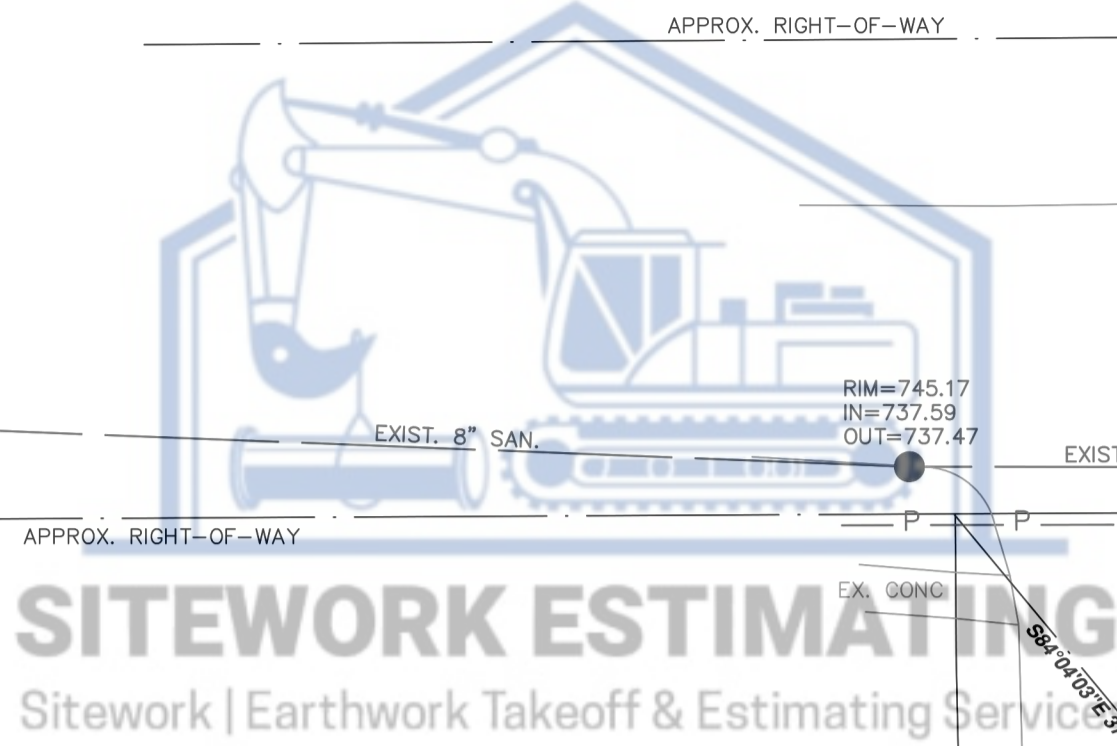
COVER
SHEET

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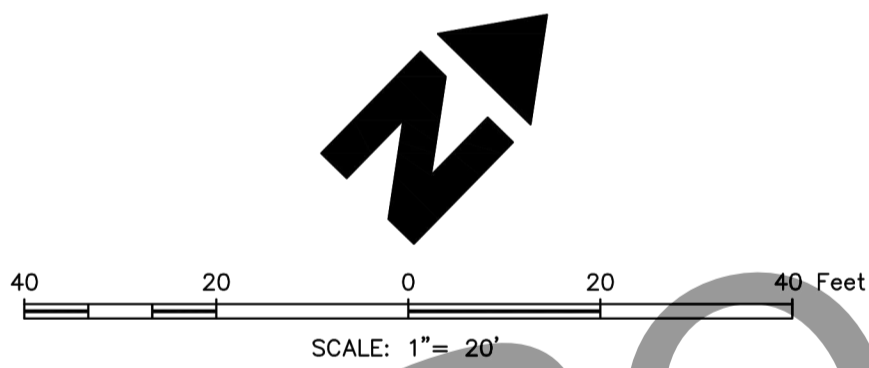
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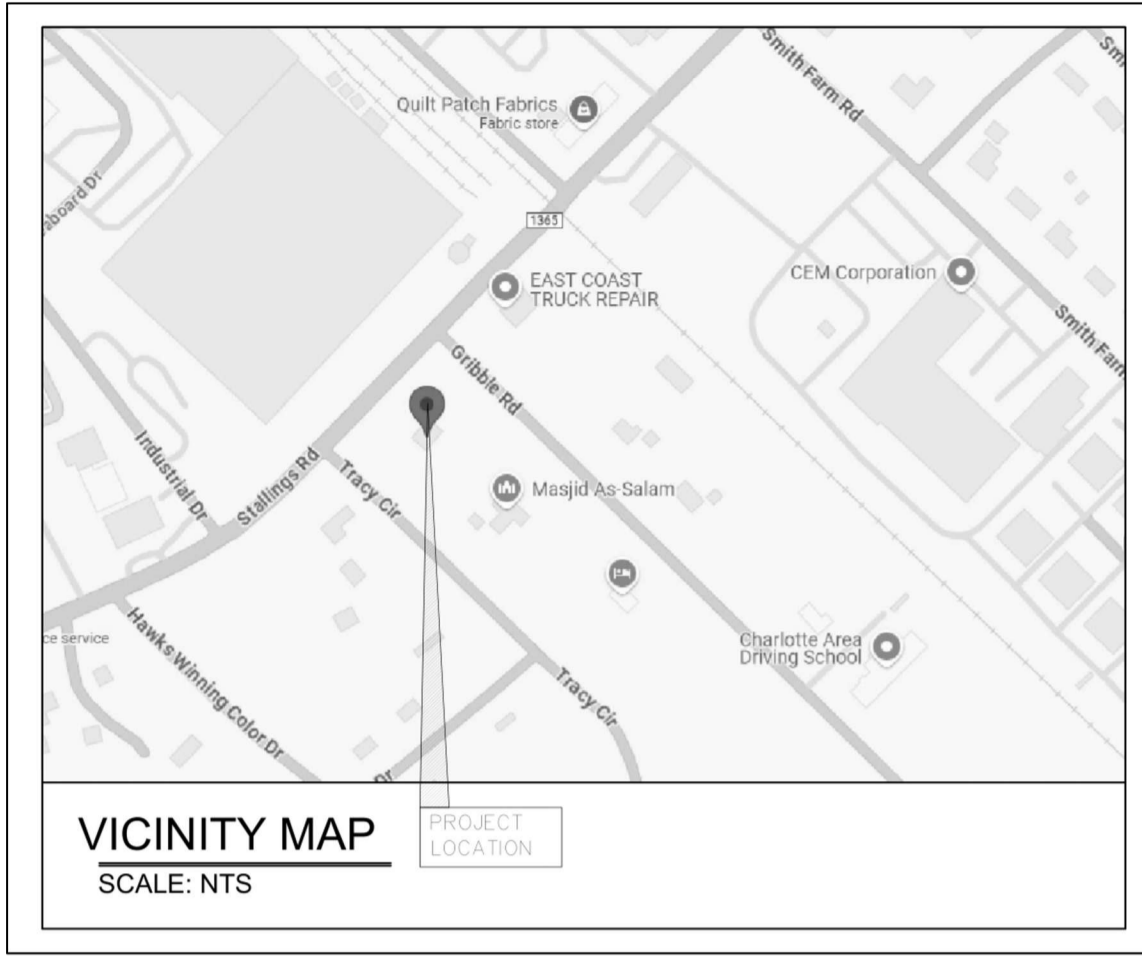
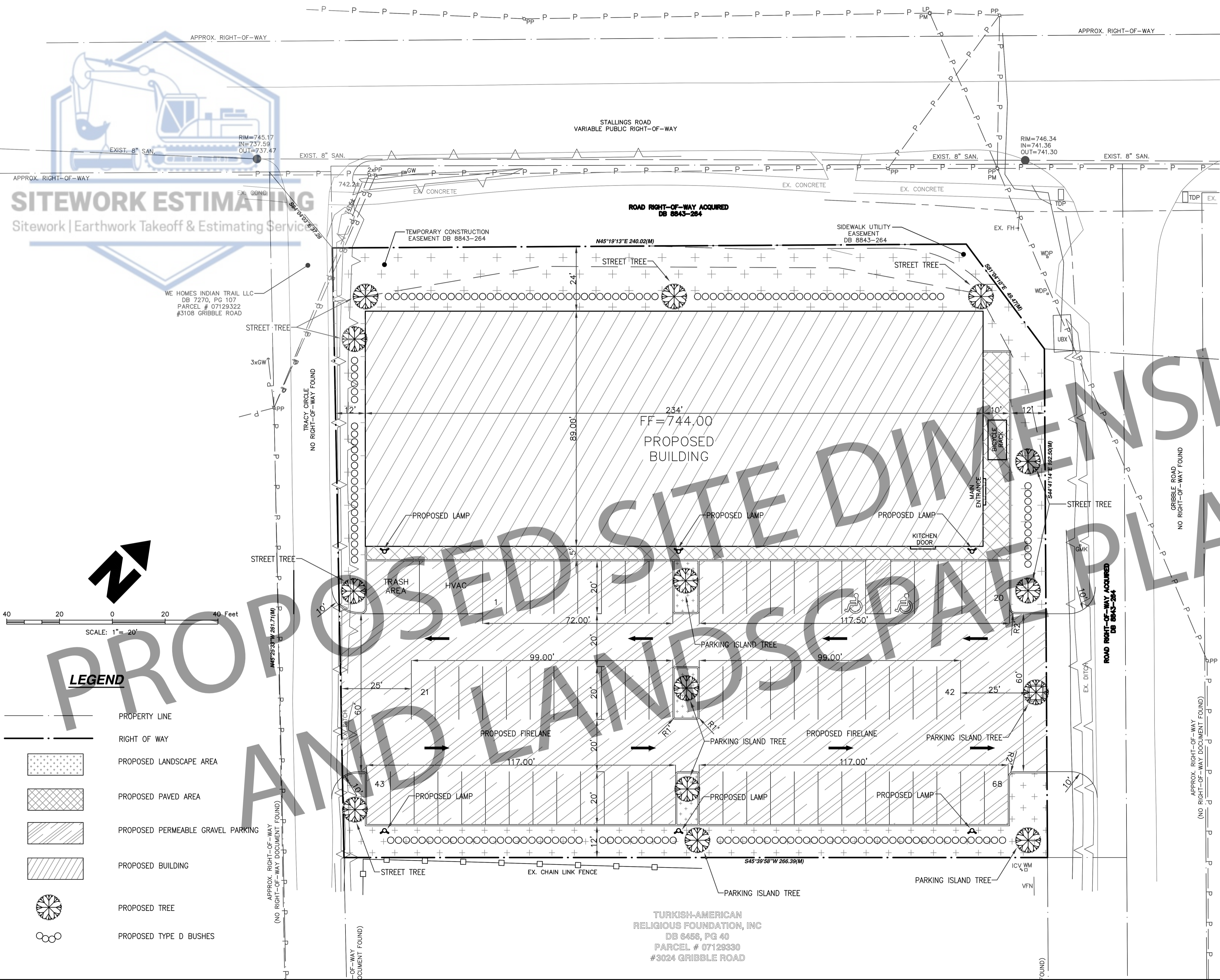


WE HOMES INDIAN TRAIL LLC
DB 7270, PG 107
PARCEL # 07129322
#3108 GRIBBLE ROAD



LEGEND

- PROPERTY LINE
- RIGHT OF WAY
- PROPOSED LANDSCAPE AREA
- PROPOSED PAVED AREA
- PROPOSED PERMEABLE GRAVEL PARKING
- PROPOSED BUILDING
- PROPOSED TREE
- PROPOSED TYPE D BUSHES



PROJECT DATA	
OWNER	JLN SPORTS AND GAMES LLC
OWNER ADDRESS	1501 WAYBRIDGE WAY, WEDDINGTON, NC 28104
CIVIL ENGINEER	MARC GODZINA
CIVIL ENGINEER ADDRESS	237 TOWERING PINE DR. LADSON, SC 29456
CIVIL ENGINEER PHONE	734-552-0016
CIVIL ENGINEER EMAIL	marcitect83@yahoo.com
SITE ADDRESS	824 STALLINGS ROAD, STALLINGS, NC 28104
PARCEL ID	07129329
TOTAL SITE AREA	1.41 ACRES (EXCLUDING EASEMENTS)
CURRENT ZONING	INDUSTRIAL
EXISTING USE	RESIDENTIAL
PROPOSES USE	INDOOR SPORTS / RECREATIONAL CLUB
BUILDING TYPE	HIGHWAY LOT
PROPOSED BUILDING GROSS FLOOR AREA	20,820 SF
PROPOSED BUILDING HEIGHT	2-STORY (50 FEET TALL)
BUILDING SETBACK	ALONG STALLINGS ROAD 24 FT ALONG GRIBBLE ROAD 12 FT ALONG TRACY CIRCLE 12 FT PARKING BUFFER FROM REAR OF PROPERTY 12 FT
FLOOD ZONES	NONE
STREAM / WETLANDS	NONE
PROPOSED PARKING	66 REGULAR SPACES + 2 HANDICAPPED SPACES + 5 BICYCLE SPACES
PARKING SPACE DIMENSION	9 FEET X 20 FEET
PARKING LOT SURFACE	PERMEABLE GRAVEL WITH BASE LAYER GRAVEL USED FOR WATER STORAGE
PROPOSED IMPERVIOUS AREA	22,941 SF
PROPOSED PARKING AREA (PERMEABLE)	25,100 SF
PROPOSED LANDSCAPE AREA	13,392 SF

TURKISH-AMERICAN
RELIGIOUS FOUNDATION, INC
DB 6456, PG 40
PARCEL # 07129330
#3024 GRIBBLE ROAD

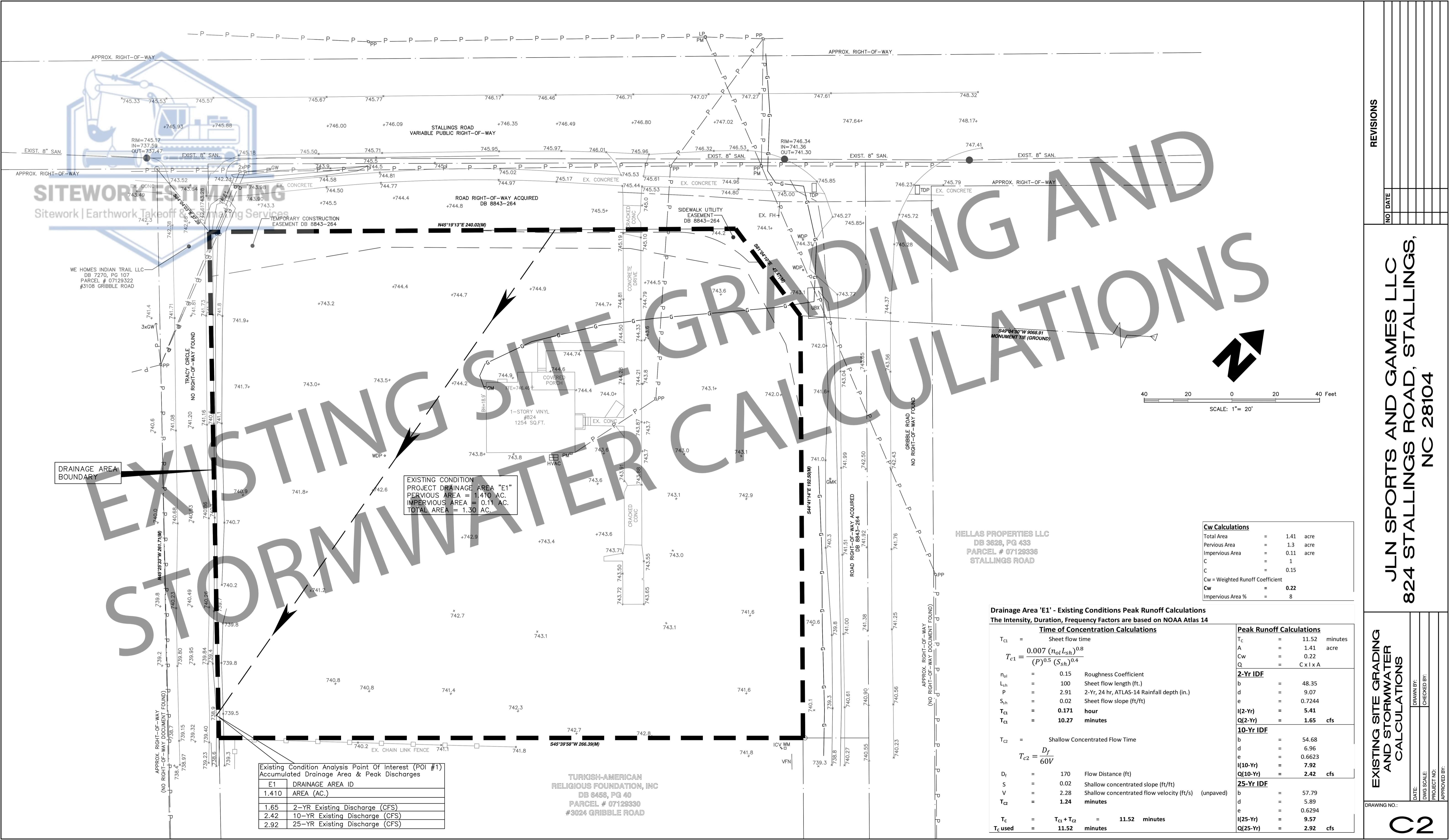
REVISIONS

JLN SPORTS AND GAMES LLC
824 STALLINGS ROAD, STALLINGS,
NC 28104

PROPOSED SITE
DIMENSION AND
LANDSCAPE PLAN

DRAWING NO.:

01



SITWORK ESTIMATING
Sitework | Earthwork Takeoff & Estimating Services

EXISTING CONDITION
PROJECT DRAINAGE AREA "E1"
PERVIOUS AREA = 1.410 AC.
IMPERVIOUS AREA = 0.11 AC.
TOTAL AREA = 1.30 AC.

Cw Calculations		
Total Area	=	1.41 acre
Pervious Area	=	1.3 acre
Impervious Area	=	0.11 acre
C	=	1
Cw = Weighted Runoff Coefficient	=	0.15
Cw	=	0.22
Impervious Area %	=	8

Drainage Area 'E1' - Existing Conditions Peak Runoff Calculations
The Intensity, Duration, Frequency Factors are based on NOAA Atlas 14

Time of Concentration Calculations		
T_{c1}	=	Sheet flow time
$T_{c1} = \frac{0.007 (n_{ol} L_{sh})^{0.8}}{(P)^{0.5} (S_{sh})^{0.4}}$		
n_{ol}	=	0.15 Roughness Coefficient
L_{sh}	=	100 Sheet flow length (ft.)
P	=	2.91 2-Yr, 24 hr, ATLAS-14 Rainfall depth (in.)
S_{sh}	=	0.02 Sheet flow slope (ft/ft)
T_{c1}	=	0.171 hour
T_{c1}	=	10.27 minutes
T_{c2}	=	Shallow Concentrated Flow Time
$T_{c2} = \frac{D_f}{60V}$		
D_f	=	170 Flow Distance (ft)
S	=	0.02 Shallow concentrated slope (ft/ft)
V	=	2.28 Shallow concentrated flow velocity (ft/s) (unpaved)
T_{c2}	=	1.24 minutes
T_c	=	$T_{c1} + T_{c2}$ = 11.52 minutes
$T_{c \text{ used}}$	=	11.52 minutes

Peak Runoff Calculations		
T_c	=	11.52 minutes
A	=	1.41 acre
Cw	=	0.22
Q	=	$C \times I \times A$
2-Yr IDF		
b	=	48.35
d	=	9.07
e	=	0.7244
$I(2-Yr)$	=	5.41
$Q(2-Yr)$	=	1.65 cfs
10-Yr IDF		
b	=	54.68
d	=	6.96
e	=	0.6623
$I(10-Yr)$	=	7.92
$Q(10-Yr)$	=	2.42 cfs
25-Yr IDF		
b	=	57.79
d	=	5.89
e	=	0.6294
$I(25-Yr)$	=	9.57
$Q(25-Yr)$	=	2.92 cfs

Existing Condition Analysis Point Of Interest (POI #1) Accumulated Drainage Area & Peak Discharges	
E1	DRAINAGE AREA ID
1.410	AREA (AC.)
1.65	2-YR Existing Discharge (CFS)
2.42	10-YR Existing Discharge (CFS)
2.92	25-YR Existing Discharge (CFS)

TURKISH-AMERICAN
RELIGIOUS FOUNDATION, INC
DB 6456, PG 40
PARCEL # 07129330
#3024 GRIDDLE ROAD

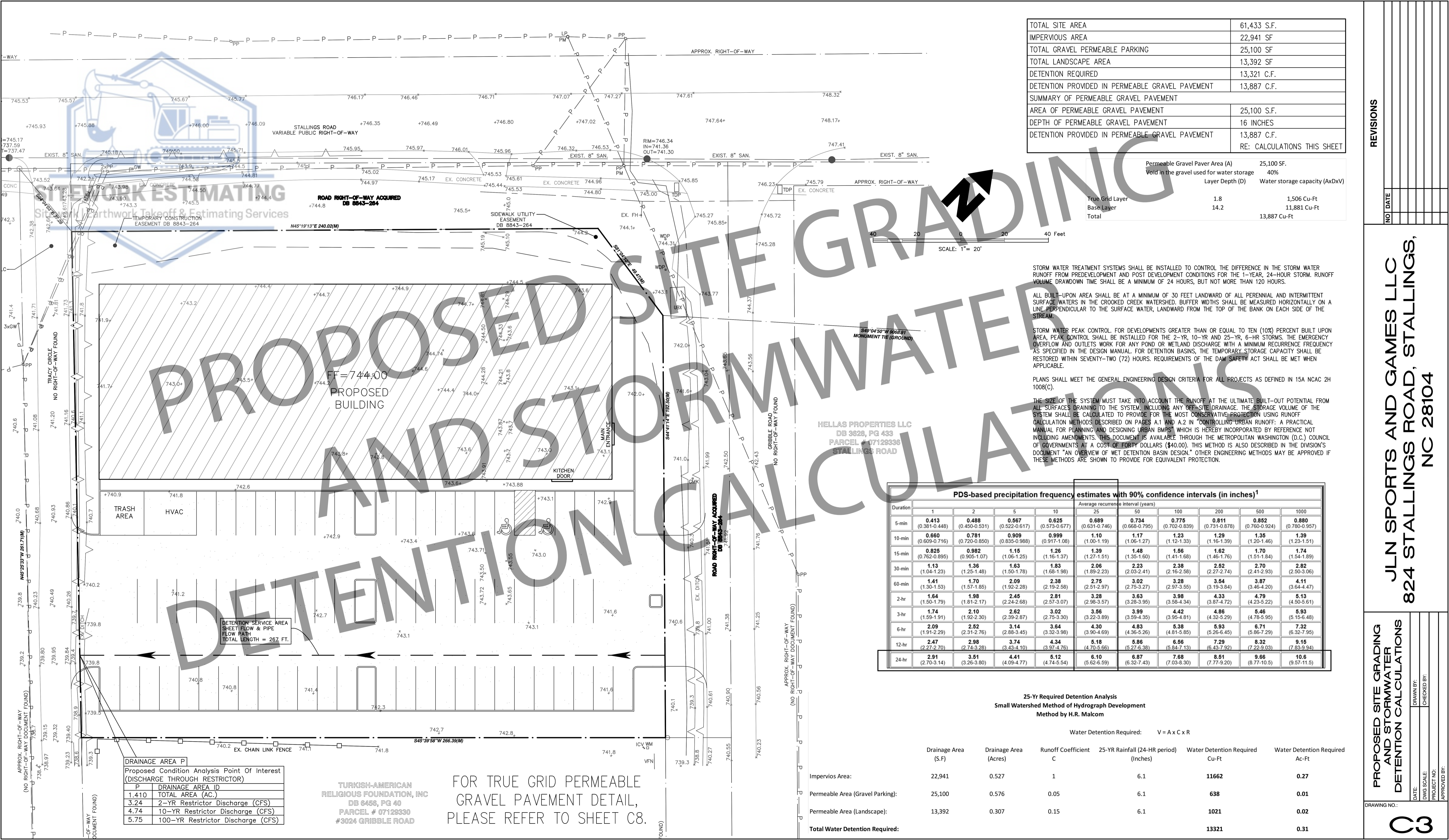
HELLAS PROPERTIES LLC
DB 3628, PG 433
PARCEL # 07129336
STALLINGS ROAD

REVISIONS

JLN SPORTS AND GAMES LLC
824 STALLINGS ROAD, STALLINGS,
NC 28104

EXISTING SITE GRADING
AND STORMWATER
CALCULATIONS

DRAWING NO.:
C2



TOTAL SITE AREA	61,433 S.F.
IMPERVIOUS AREA	22,941 SF
TOTAL GRAVEL PERMEABLE PARKING	25,100 SF
TOTAL LANDSCAPE AREA	13,392 SF
DETENTION REQUIRED	13,321 C.F.
DETENTION PROVIDED IN PERMEABLE GRAVEL PAVEMENT	13,887 C.F.
SUMMARY OF PERMEABLE GRAVEL PAVEMENT	
AREA OF PERMEABLE GRAVEL PAVEMENT	25,100 S.F.
DEPTH OF PERMEABLE GRAVEL PAVEMENT	16 INCHES
DETENTION PROVIDED IN PERMEABLE GRAVEL PAVEMENT	13,887 C.F.
RE: CALCULATIONS THIS SHEET	

Permeable Gravel Paver Area (A)	25,100 SF.	
Void in the gravel used for water storage	40%	
Layer Depth (D)	Water storage capacity (AxDxV)	
True Grid Layer	1.8	1,506 Cu-Ft
Base Layer	14.2	11,881 Cu-Ft
Total		13,887 Cu-Ft

STORM WATER TREATMENT SYSTEMS SHALL BE INSTALLED TO CONTROL THE DIFFERENCE IN THE STORM WATER RUNOFF FROM PREDEVELOPMENT AND POST DEVELOPMENT CONDITIONS FOR THE 1-YEAR, 24-HOUR STORM. RUNOFF VOLUME DRAWDOWN TIME SHALL BE A MINIMUM OF 24 HOURS, BUT NOT MORE THAN 120 HOURS.

ALL BUILT-UPON AREA SHALL BE AT A MINIMUM OF 30 FEET LANDWARD OF ALL PERENNIAL AND INTERMITTENT SURFACE WATERS IN THE CROOKED CREEK WATERSHED. BUFFER WIDTHS SHALL BE MEASURED HORIZONTALLY ON A LINE PERPENDICULAR TO THE SURFACE WATER, LANDWARD FROM THE TOP OF THE BANK ON EACH SIDE OF THE STREAM.

STORM WATER PEAK CONTROL. FOR DEVELOPMENTS GREATER THAN OR EQUAL TO TEN (10%) PERCENT BUILT UPON AREA, PEAK CONTROL SHALL BE INSTALLED FOR THE 2-YR, 10-YR AND 25-YR, 6-HR STORMS. THE EMERGENCY OVERFLOW AND OUTLETS WORK FOR ANY POND OR WETLAND DISCHARGE WITH A MINIMUM RECURRENCE FREQUENCY AS SPECIFIED IN THE DESIGN MANUAL. FOR DETENTION BASINS, THE TEMPORARY STORAGE CAPACITY SHALL BE RESTORED WITHIN SEVENTY-TWO (72) HOURS. REQUIREMENTS OF THE DAM SAFETY ACT SHALL BE MET WHEN APPLICABLE.

PLANS SHALL MEET THE GENERAL ENGINEERING DESIGN CRITERIA FOR ALL PROJECTS AS DEFINED IN 15A NCAC 2H 1008(C).

THE SIZE OF THE SYSTEM MUST TAKE INTO ACCOUNT THE RUNOFF AT THE ULTIMATE BUILT-OUT POTENTIAL FROM ALL SURFACES DRAINING TO THE SYSTEM, INCLUDING ANY OFF-SITE DRAINAGE. THE STORAGE VOLUME OF THE SYSTEM SHALL BE CALCULATED TO PROVIDE FOR THE MOST CONSERVATIVE PROTECTION USING RUNOFF CALCULATION METHODS DESCRIBED ON PAGES A.1 AND A.2 IN "CONTROLLING URBAN RUNOFF: A PRACTICAL MANUAL FOR PLANNING AND DESIGNING URBAN BMPs" WHICH IS HEREBY INCORPORATED BY REFERENCE NOT INCLUDING AMENDMENTS. THIS DOCUMENT IS AVAILABLE THROUGH THE METROPOLITAN WASHINGTON (D.C.) COUNCIL OF GOVERNMENTS AT A COST OF FORTY DOLLARS (\$40.00). THIS METHOD IS ALSO DESCRIBED IN THE DIVISION'S DOCUMENT "AN OVERVIEW OF WET DETENTION BASIN DESIGN." OTHER ENGINEERING METHODS MAY BE APPROVED IF THESE METHODS ARE SHOWN TO PROVIDE FOR EQUIVALENT PROTECTION.

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.413 (0.381-0.448)	0.488 (0.450-0.531)	0.567 (0.522-0.617)	0.625 (0.573-0.677)	0.689 (0.631-0.746)	0.734 (0.668-0.795)	0.775 (0.702-0.839)	0.811 (0.731-0.878)	0.852 (0.760-0.924)	0.880 (0.780-0.957)
10-min	0.660 (0.609-0.716)	0.781 (0.720-0.850)	0.909 (0.835-0.988)	0.999 (0.917-1.08)	1.10 (1.00-1.19)	1.17 (1.06-1.27)	1.23 (1.12-1.33)	1.29 (1.16-1.39)	1.35 (1.20-1.46)	1.39 (1.23-1.51)
15-min	0.825 (0.762-0.895)	0.982 (0.905-1.07)	1.15 (1.06-1.25)	1.26 (1.16-1.37)	1.39 (1.27-1.51)	1.48 (1.35-1.60)	1.56 (1.41-1.68)	1.62 (1.46-1.76)	1.70 (1.51-1.84)	1.74 (1.54-1.89)
30-min	1.13 (1.04-1.23)	1.36 (1.25-1.48)	1.63 (1.50-1.78)	1.83 (1.68-1.98)	2.06 (1.89-2.23)	2.23 (2.03-2.41)	2.38 (2.16-2.58)	2.52 (2.27-2.74)	2.70 (2.41-2.93)	2.82 (2.50-3.06)
60-min	1.41 (1.30-1.53)	1.70 (1.57-1.85)	2.09 (1.92-2.28)	2.38 (2.19-2.58)	2.75 (2.51-2.97)	3.02 (2.75-3.27)	3.28 (2.97-3.55)	3.54 (3.19-3.84)	3.87 (3.46-4.20)	4.11 (3.64-4.47)
2-hr	1.64 (1.50-1.79)	1.98 (1.81-2.17)	2.45 (2.24-2.68)	2.81 (2.57-3.07)	3.28 (2.98-3.57)	3.63 (3.28-3.95)	3.98 (3.58-4.34)	4.33 (3.87-4.72)	4.79 (4.23-5.22)	5.13 (4.50-5.61)
3-hr	1.74 (1.59-1.91)	2.10 (1.92-2.30)	2.62 (2.39-2.87)	3.02 (2.75-3.30)	3.56 (3.22-3.89)	3.99 (3.59-4.35)	4.42 (3.95-4.81)	4.86 (4.32-5.29)	5.46 (4.78-5.95)	5.93 (5.15-6.48)
6-hr	2.09 (1.91-2.29)	2.52 (2.31-2.76)	3.14 (2.88-3.45)	3.64 (3.32-3.98)	4.30 (3.90-4.69)	4.83 (4.36-5.26)	5.38 (4.81-5.85)	5.93 (5.26-6.45)	6.71 (5.86-7.29)	7.32 (6.32-7.95)
12-hr	2.47 (2.27-2.70)	2.98 (2.74-3.28)	3.74 (3.43-4.10)	4.34 (3.97-4.76)	5.12 (4.70-5.66)	5.86 (5.27-6.38)	6.56 (5.84-7.13)	7.29 (6.43-7.92)	8.32 (7.22-9.03)	9.15 (7.83-9.94)
24-hr	2.91 (2.70-3.14)	3.51 (3.26-3.80)	4.41 (4.09-4.77)	5.12 (4.74-5.54)	6.10 (5.62-6.59)	6.87 (6.32-7.43)	7.68 (7.03-8.30)	8.51 (7.77-9.20)	9.66 (8.77-10.5)	10.6 (9.57-11.5)

25-Yr Required Detention Analysis
Small Watershed Method of Hydrograph Development
Method by H.R. Malcom

Water Detention Required: V = A x C x R					
Drainage Area (S.F)	Drainage Area (Acres)	Runoff Coefficient C	25-YR Rainfall (24-HR period) (Inches)	Water Detention Required Cu-Ft	Water Detention Required Ac-Ft
Impervious Area:	22,941	0.527	6.1	11662	0.27
Permeable Area (Gravel Parking):	25,100	0.576	0.05	638	0.01
Permeable Area (Landscape):	13,392	0.307	0.15	1021	0.02
Total Water Detention Required:				13321	0.31

DRAINAGE AREA P	
Proposed Condition Analysis Point Of Interest (DISCHARGE THROUGH RESTRICTOR)	
P	DRAINAGE AREA ID
1.410	TOTAL AREA (AC.)
3.24	2-YR Restrictor Discharge (CFS)
4.74	10-YR Restrictor Discharge (CFS)
5.75	100-YR Restrictor Discharge (CFS)

TURKISH-AMERICAN
RELIGIOUS FOUNDATION, INC
DB 6458, PG 40
PARCEL # 07129330
#3024 GRIBBLE ROAD

FOR TRUE GRID PERMEABLE
GRAVEL PAVEMENT DETAIL,
PLEASE REFER TO SHEET C8.

REVISIONS

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824 STALLINGS ROAD, STALLINGS,
NC 28104

PROPOSED SITE GRADING
AND STORMWATER
DETENTION CALCULATIONS

DRAWING NO.:

C3



- 110 AA.AA

SCALE: 1" = 20'

C4

