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TX. REG: ENGINEERING FIRM F-14439
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Steve E. Stoner

TECHNICAL MEMORANDUM

To: Jacob Speer, P.E. – Director of Public Works, City of University Park
From: Steve E. Stoner, P.E., PTOE
CC: Ed Levine – Executive Director of Construction Services, Highland Park ISD
Date: April 5, 2017
Subject: Traffic and Parking Study for Proposed HPISD Parking Lots on Hyer Street
PK#3943-17.097

EXECUTIVE SUMMARY

The services of Pacheco Koch were retained by the Highland Park Independent School District (HPISD) to review the traffic and parking impact of the proposed construction of two parking lots on the northeast corner of the campus of Highland Park High School (HP HS) in University Park, Texas. A proposed site plan, prepared by **Raymond L. Goodson Jr., Inc. Consulting Engineers**, and a site location map are attached for reference.

The proposed development will consist of two surface parking lots providing a total of 217 spaces. The lots are located north and south of Hyer Street, immediately west of the alley, west of Preston Road. Immediately south of the southern parking lot, a playfield will be constructed. The site previously contained apartment units, which were demolished in 2015.

As part of the approval process, the City of University Park requested a study to quantify the traffic and parking impact of the proposed parking lots.

Parking Impact

The two parking lots will provide a total of 217 parking spaces to the HP HS campus. The lots are planned to be allocated to students use during school hours. The lots are being created in part to offset the net loss of 79 parking spaces on the northwest corner of the main high school building where a proposed building expansion will displace an existing parking lot. That lot is currently being used by HP HS faculty and staff who will be reassigned to the HP HS parking garage. The student parking displaced from the garage will be reassigned to the new Hyer Street lots. The Hyer lots will also offset the loss of approximately 23 public, on-street parking spaces on Douglas Avenue and Westchester Drive that HP HS had been claiming as part of the school's parking supply (the spaces will remain in place but are to be considered public parking spaces rather than counted toward the school's parking supply).

As summarized in the following table, the proposed Hyer parking lots will result in a net increase of 115 parking spaces on the HP HS campus.

Table 1. HP HS Parking Impact Summary

LOCATION	EXISTING CONDITIONS	PROPOSED CONDITIONS
Hyer Street Lots	0 spaces	217 spaces
Faculty/Staff Lot (Northwest corner of building)	79 spaces	0 spaces
On-street spaces (Douglas and Westchester)	23 spaces	0 spaces
Net Increase	--	+115 spaces

NOTE: The proposed parking lots will provide self-contained parking for the adjacent playfield that is also proposed as part of the project. On an interim basis, the playfield will be used to replace the playfields at Highland Park Middle School that is decommissioned during construction of site improvements. The field will be used by organized seasonal team sports during the evenings (Highland Park Soccer Academy, 30-60 kids during Fall and Spring; and, City Youth Lacrosse, 25-50 kids during Fall), and is otherwise available for public use on a first-come-first-served basis. All parking for the fields can be accommodated in the new parking lots.

Traffic Impact

Peak traffic activity on the local streets is assumed to occur at the start and end of the school day at HP HS. To analyze the traffic impact of the parking lots, intersection turning movement counts were collected during school periods at several locations along Hyer Street on Tuesday, March 21, 2017. Traffic generated by the parking lots was added to the background traffic under the assumption that 90% of the spaces would fill during the morning peak school-traffic period and 90% of the spaces would empty during the afternoon peak school-traffic period.

Currently, Hyer Street operates as two-way from Preston Road to the alley west of Preston Road. West of the alley, Hyer operates as one-way, westbound, with Resident-only parking on both sides of the street. While maintaining the existing street operation (Scenario 1) is a viable option, two other scenarios were also evaluated:

- Scenario 2 – between the alley and the westernmost parking lot driveway, convert the street to two-way operation, and
- Scenario 3 – same as Scenario 2 with a right-turn only restriction during school hours at the eastbound approach from Hyer Street onto Preston Road.

Exhibit 2 conceptually illustrates the three scenarios. The operational conditions of each scenario were analyzed using the Synchro software to calculate the intersection Levels of Service and average delays, which are summarized in **Table 2**. Based upon the analyses, the following assessments were made for each scenario:

Scenario 1 – The existing delay for motorists on Hyer Street entering Preston Road is perceptible due to the high traffic volumes on Preston Road. Although these are currently low-volume maneuvers during school traffic periods, the calculated average delays will increase with the addition of parking lot traffic. (Note: High calculated delays at unsignalized minor-street approaches at major thoroughfare intersections are typical.)

Table 2. Peak Hour Intersection Capacity Analysis Results Summary
(Unsignalized Intersections)

INTERSECTION	TRAFFIC MANEUVER	EXISTING VOLUMES		PROJECTED VOLUMES					
		EXISTING CONDITIONS		SCENARIO 1: EXISTING CONDITIONS		SCENARIO 2: TWO-WAY EXTENSION		SCENARIO 3: TWO-WAY EXT. W/ NO LEFT-TURN	
		AM	PM	AM	PM	AM	PM	AM	PM
Preston Road @ Hyer Street	NBL	B (11.1)	A (9.8)	B (14.7)	A (9.8)	B (14.7)	A (9.8)	B (14.7)	A (9.8)
	EBLR	D (27.5)	C (21.3)	F (>100)	C (21.7)	F (>100)	F (86.0)	B (13.5)	B (14.3)
Westchester Drive @ Hyer Street	WBLR	B (10.2)	B (11.0)	B (10.3)	C (17.8)	B (10.2)	B (13.0)	B (10.2)	B (13.0)
Hyer Street @ Alley	NBLTR	A (9.0)	A (9.1)	B (10.1)	A (9.2)	B (10.1)	A (9.8)	B (10.1)	A (9.8)
	EBL	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	WBL	A (0.0)	A (0.0)	A (7.2)	A (0.0)	A (7.3)	A (0.0)	A (7.3)	A (0.0)
	SBLTR	A (9.7)	A (9.0)	B (11.8)	A (9.0)	B (11.9)	A (9.4)	B (11.9)	A (9.4)
Hyer Street @ Driveway 1	NBLTR	-	-	B (10.8)	A (10.0)	A (8.3)	A (9.1)	A (8.3)	A (9.1)
	WBL	-	-	A (7.4)	A (7.2)	A (7.4)	A (7.2)	A (7.4)	A (7.2)
Hyer Street @ Driveway 2	EBL	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	SBLTR	-	-	A (9.4)	A (9.2)	A (9.5)	A (9.5)	A (9.5)	A (9.5)

KEY:

A, B, C, D, E, F = Level of Service
 NB-, SB-, EB-, WB- = intersection approach
 AM = AM Peak Hour of Adjacent Street

(##.#) = Average Seconds of Delay Per Vehicle
 -L, -T, -R = Left, Through, Right turning movement
 PM = PM Peak Hour of Adjacent Street

Analytically, other traffic maneuvers are expected to operate at good Levels of Service and low average delays.

Scenario 2 – The Scenario 1 analysis results do not fully reflect the secondary queuing that occurs for short periods on northbound Westchester Drive that results from high traffic volumes approaching Lovers Lane. This is a pre-existing condition that is unrelated to the proposed parking lots. However, by increasing the traffic volumes on Hyer Street, the actual delays and queues on Hyer Street at Westchester Drive will also increase. (Note: Currently, this condition occurs only for short periods of 10-15 minutes, and queues usually clears during each cycle of the traffic signal).

Scenario 3 – While Scenario 2 would reduce the impact at the Hyer-Westchester intersection, it would adversely impact delays and queues at the Hyer-Preston intersection. To mitigate that impact, it is suggested that left-turns from Hyer Street onto northbound Preston Road be prohibited. In order to minimize the effect on local businesses, the restriction can be limited to school hours on school days only.

CONCLUSIONS

The proposed parking lots on Hyer Street will create 217 new parking spaces on the Highland Park High School campus – or a net increase of 115 spaces after accounting for spaces that will be lost due to construction or otherwise removed from the official inventory.

The parking spaces will be used by HP HS students, plus occasional use of the adjacent playfields during evenings and weekends. The parking lot driveways will be located on Hyer Street, which currently operates as one-way, westbound from the adjacent alley to Westchester Drive.

The traffic impact created by the proposed parking lots will coincide with the existing peak school traffic periods, which is primarily concentrated in 15- to 30-minute periods in the morning and afternoons on school days. The majority of traffic generated by the parking lots will be existing trips already occurring on other parts of the roadway network that are generated by the High School. However, localized traffic impact on Hyer Street will be increased.

The traffic impacts on Hyer Street were analyzed under three operational scenarios that are described previously. The merits of each scenario are summarized in **Table 3**.

Table 3. Hyer Street Alternatives Comparison

SCENARIO	PROS	CONS
Scenario 1 (Existing roadway conditions)	• No change to existing operations	• Increased delays at Preston and Westchester intersections
Scenario 2 (Extend two-way operation to driveways)	• Distributes traffic impact	• Requires removal of on-street parking
Scenario 3 (Extend two-way operation, plus prohibit left-turn at Preston Road)	• Minimizes overall traffic impact	• Requires removal of on-street parking • Enforcement challenges for turn restriction • Minor loss of accessibility (minimized if part-time restriction)

Scenario 3 will minimize the overall traffic impact of the parking lots and is therefore recommended from a traffic operational perspective. However, the trade-offs to existing residents and local businesses should be gaged by the City in order to select the preferred strategy.

END OF MEMO

SUMMARY:

- 79 spaces (faculty) displaced by building expansion ●
 - > Faculty parking relocated to HPISD garage ●
 - 217 spaces (student) new construction ●
 - > Serves student parking displaced from garage ●
 - > Serves student parking displaced from Douglas and Westchester Street
- 138 spaces = Net parking increase

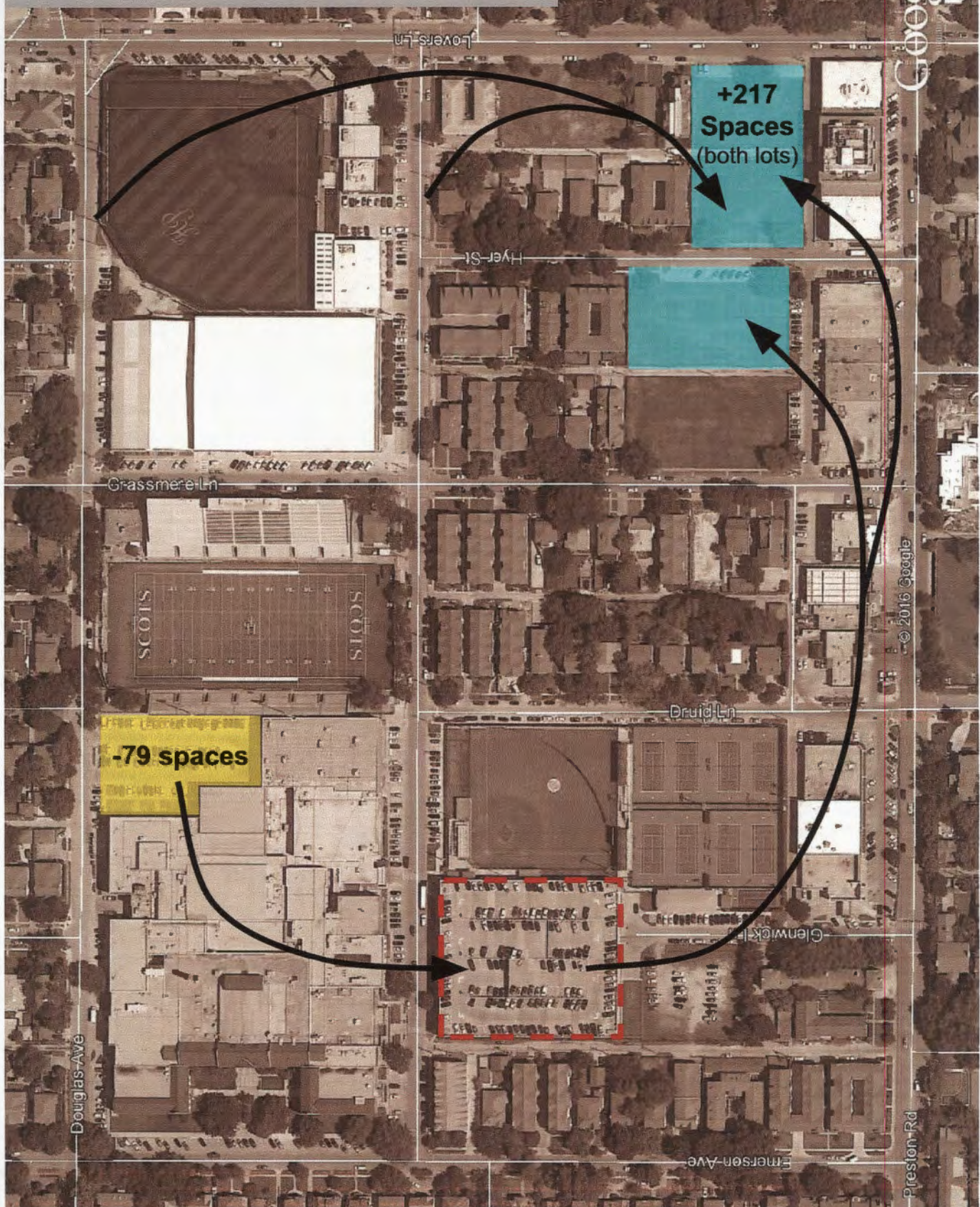
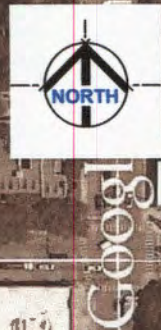
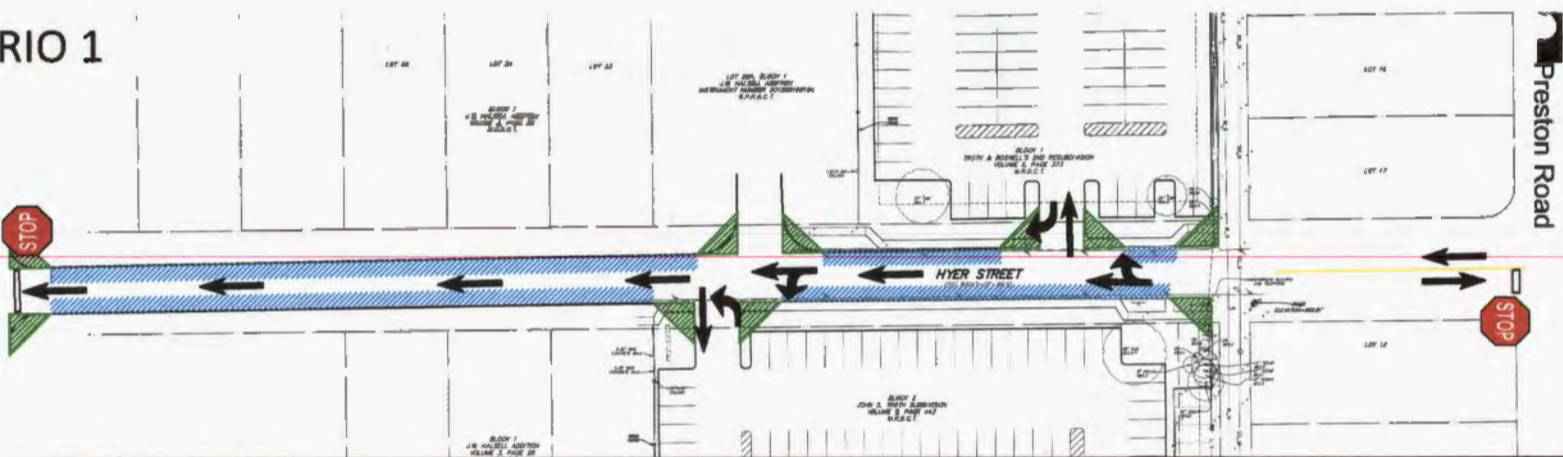


EXHIBIT 1

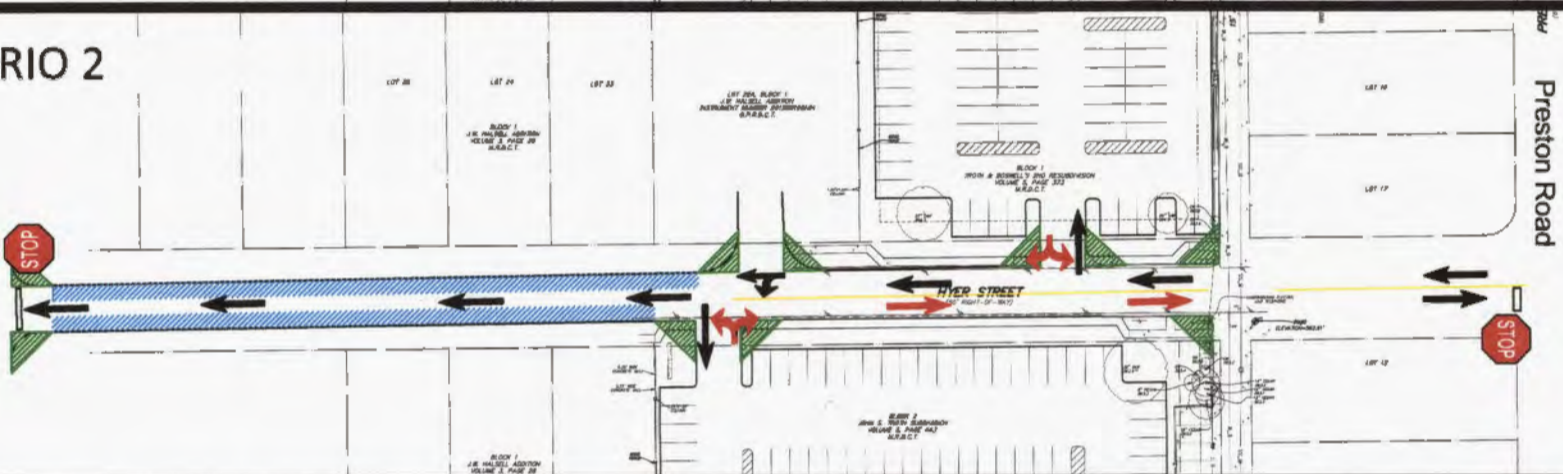
**HPISD Highland Park High School - Hyer Street Parking Lots
Parking Impact Summary**



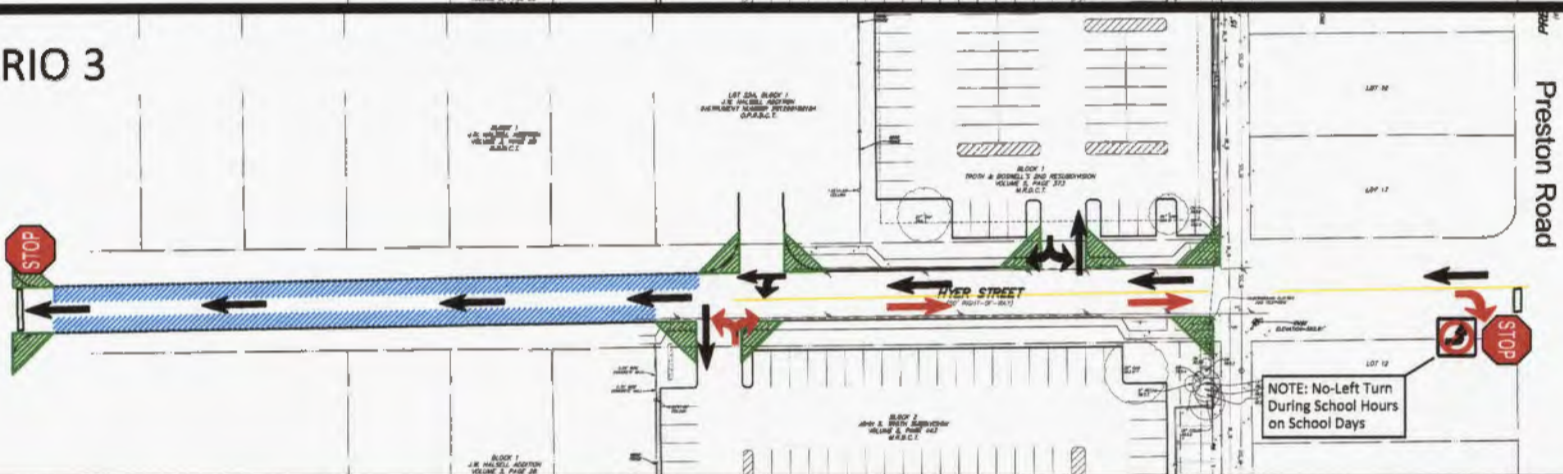
SCENARIO 1



SCENARIO 2



SCENARIO 3



NOTE: No-Left Turn
During School Hours
on School Days