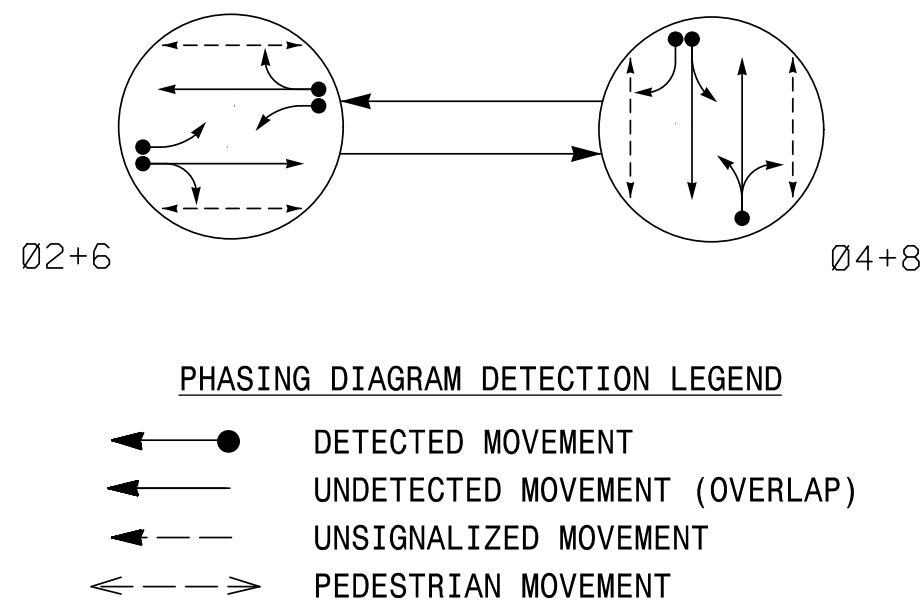
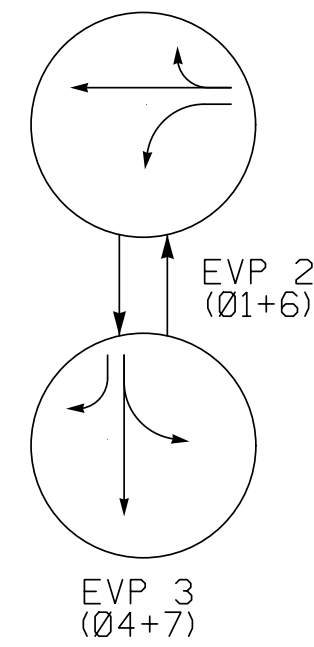


**PHASING DIAGRAM**



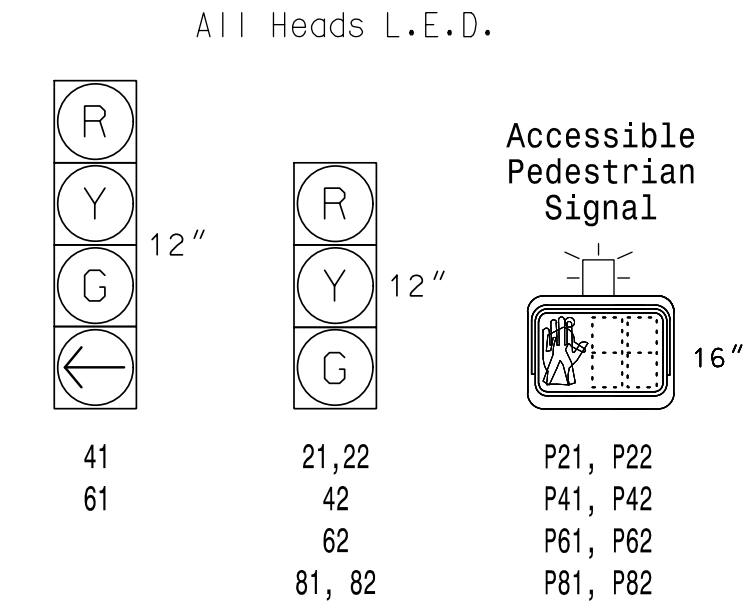
**EV PREEMPT PHASES**  
(Medium Priority)



**TABLE OF OPERATION**

SIGNAL FACE	PHASE					
	02+6	04+8	EVP 2	EVP 3	F	Y
21, 22	G	R	R	R	Y	
41	R	G	R	G	R	
42	R	G	R	G	R	
61	G	R	G	R	Y	
62	G	R	G	R	Y	
81, 82	R	G	R	R	R	
P21, P22	W	DW	DW	DW	DRK	
P41, P42	DW	W	DW	DW	DRK	
P61, P62	W	DW	DW	DW	DRK	
P81, P82	DW	W	DW	DW	DRK	

**SIGNAL FACE I.D.**



**ASC/3 VIDEO DETECTOR INSTALLATION CHART**

ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW ZONE	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM ZONE	NEW CARD
2A *	6X40	0	*	X	2	Yes	-	-	-	S	-	X
2B *	6X40	0	*	X	2	Yes	-	-	-	S	-	X
4A *	6X40	0	*	X	4	Yes	-	3	-	S	-	X
4B *	6X40	0	*	X	4	Yes	-	-	-	S	-	X
6A *	6X40	0	*	X	6	Yes	-	-	-	S	-	X
6B *	6X40	0	*	X	6	Yes	-	-	-	S	-	X
8A *	6X40	0	*	X	8	Yes	-	3	-	S	-	X

\* See Note #11

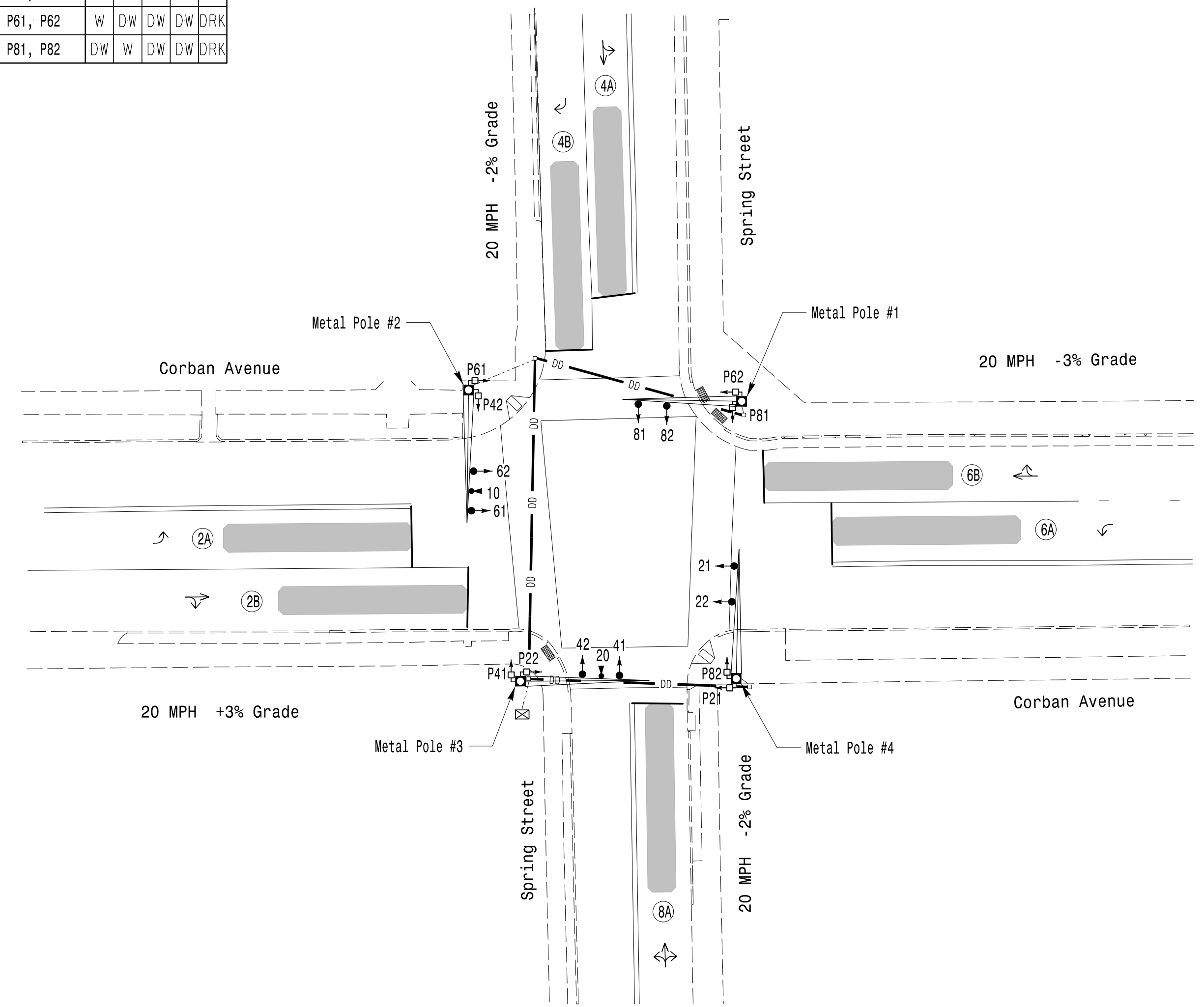
**2 Phase Fully Actuated W/ Emergency Vehicle Preemption (Concord Signal System)**

- NOTES**
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018.
  - Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
  - Set all detector units to presence mode.
  - Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
  - Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
  - Program pedestrian heads to countdown the flashing "Don't Walk" time only.
  - Pavement markings are existing.
  - Program signal heads 41 and 61 to clear to all red before going into preempt.
  - Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
  - Install new cabinet on the existing cabinet foundation.
  - Install 360 degree video detection system for vehicle detection. Perform installation according to manufacturer's directions and City engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.
  - Optical detector 10 calls EVP 2; Optical detector 20 calls EVP 3.
  - This intersection features accessible pedestrian signals utilizing a speech walk indication. Refer to section 4E.11 of the 2009 MUTCD for tone rate and frequency requirements.
  - Phase 1 and phase 7 used during emergency vehicle preemption only.

**ACCESSIBLE PEDESTRIAN SIGNAL OPERATION**

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21, P22	X	-	Walk	Spring, Walk sign is on to cross Spring
			Flashing Don't Walk / Don't Walk	Wait, Wait to cross Spring.
P41, P42	X	-	Walk	Corban, Walk sign is on to cross Corban
			Flashing Don't Walk / Don't Walk	Wait, Wait to cross Corban.
P61, P62	X	-	Walk	Spring, Walk sign is on to cross Spring
			Flashing Don't Walk / Don't Walk	Wait, Wait to cross Spring.
P81, P82	X	-	Walk	Corban, Walk sign is on to cross Corban
			Flashing Don't Walk / Don't Walk	Wait, Wait to cross Corban.

\* Volume should be set to 5dB over ambient noise level.



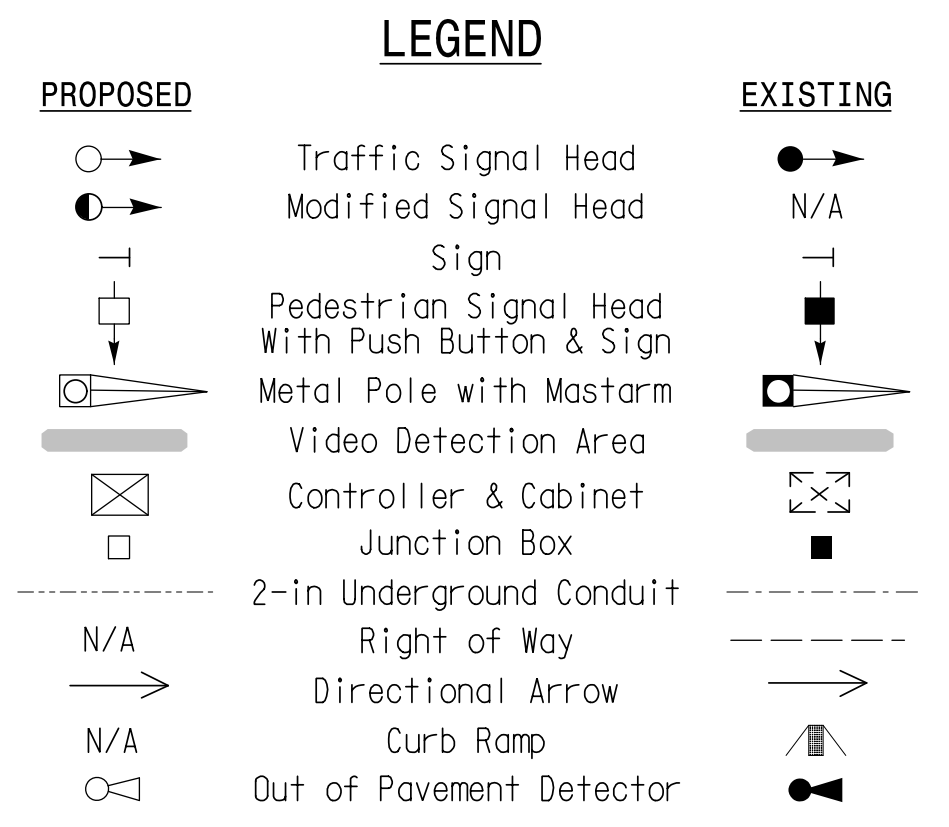
**ASC/3 TIMING CHART**

FEATURE	PHASE					
	1	2	4	6	7	8
Min Green *	7	10	7	10	7	7
Walk *	0	7	7	7	0	7
Ped Clear	0	6	12	7	0	10
Veh. Extension *	2.0	2.0	2.0	2.0	2.0	2.0
Max I *	30	40	30	40	30	30
Yellow	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.9	2.1	2.6	1.9	2.3	2.3
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	X	-	-
Recall Position	-	VEH. RECALL	-	VEH. RECALL	-	-
Dual Entry	X	-	X	-	X	X
Simultaneous Gap	X	X	X	X	X	X

**ASC/3 EV PREEMPT**

FUNCTION	EVP 2	EVP 3
Exit Phase(s)	2+6	4+8
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	Y	Y
Terminate Phases	N	N
Entrance Walk	1	1
Entrance Ped Clear	7	10
Entrance Min Green	1	1
Entrance Yellow Change	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Minimum Dwell Time	7	7
Preempt Input Extension Time	0.0	0.0
Preempt Max Time	120	120
Exit Yellow Change	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

\* Allows normal phase times to be used.



**Signal Upgrade**

PLANS PREPARED IN THE OFFICE OF:  
**Kimley Horn**  
NC License #0102  
421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
(919) 677-2000

**Corban Avenue at Spring Street**  
Cabarrus County Concord

PLAN DATE: December 2019 REVIEWED BY: SP Pennington  
PREPARED BY: DA Waller REVIEWED BY: SL Phillips

SCALE: 1" = 20'

REVISIONS: \_\_\_\_\_ INIT. DATE

SIGNATURE: *DA Waller* DATE: 2/24/2020

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032607  
S. JACOB L. PHILLIPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIG. INVENTORY NO. C-9507

2/24/2020 11:35:42 AM susan.pennington K:\RAL\_TPTD\SIGNALS\401529022 Downtown Retrofit\MS4 - Signal Design\c-9507.dgn