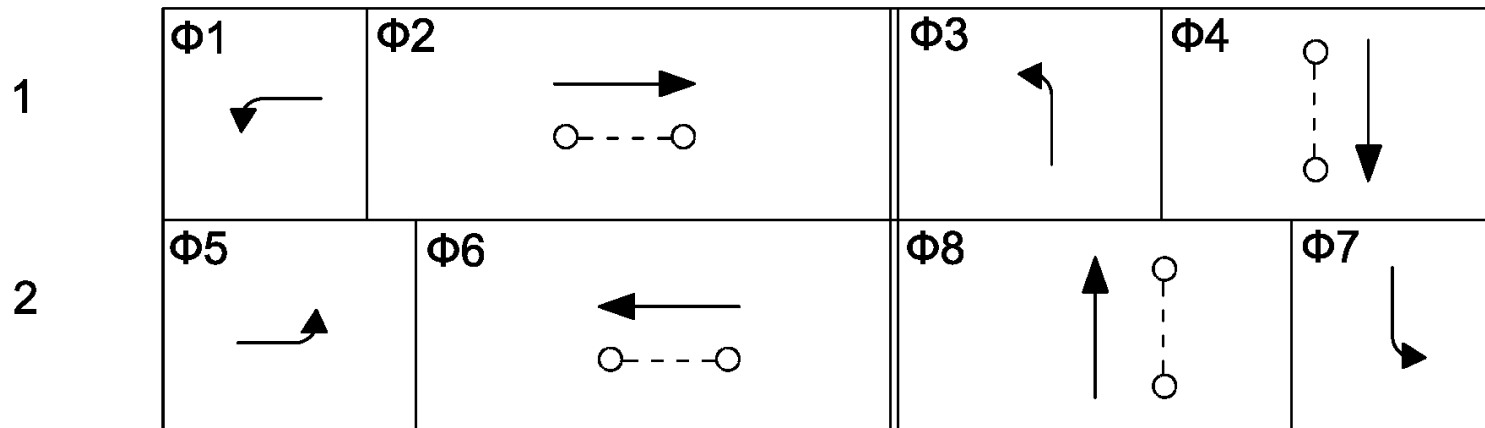


# MANAGING MULTIPLE LONG PED. SERVICES WITHIN SHORT CYCLES

Dallas TexITE Chapter Lunch

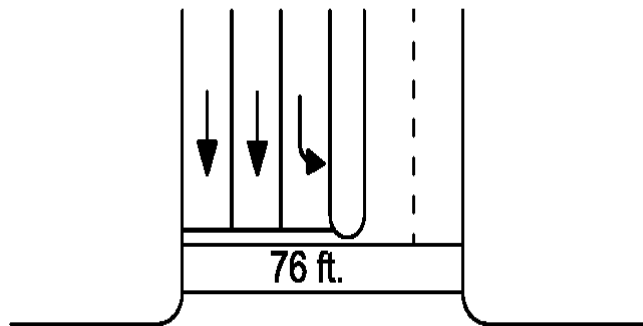
A box around the industry's thinking for  
over 40 years:  
Ped. Timings are merely extra intervals in  
through vehicle phases

RING



## BACK THEN ('70s, '80s & '90s)

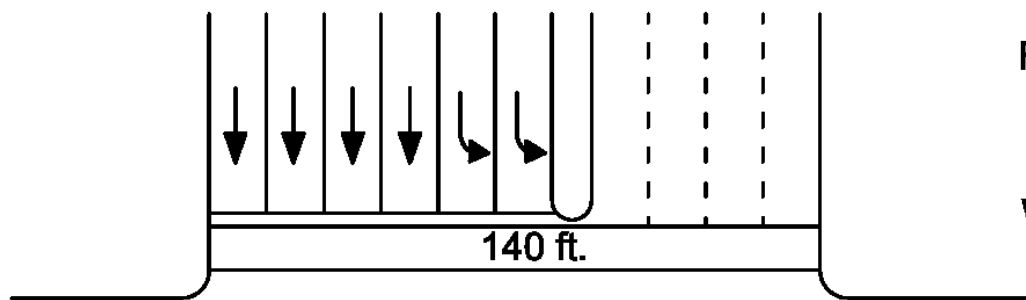
Not a significant problem – WALK & FDW intervals rarely totaled much more than the coord. split required for vehicle traffic



$$\text{FDW} = \frac{76 \text{ ft.}}{4 \text{ ft./sec.}} - (Y + R) = 14 \text{ sec.}$$

$$\text{WALK} + \text{FDW} = 18 \text{ sec.}$$

NOW: Ped. Times often total most of twice what their parent phases' vehicle movements require for discharge, especially during off-peak periods.



$$\text{FDW} = \frac{140 \text{ ft.}}{3.5 \text{ ft./sec.}} = 40 \text{ sec.}$$

$$\text{WALK} + \text{FDW} = 7 \text{ sec.} + 40 \text{ sec.} = 47 \text{ sec.}$$

## THEN:

1. WALK
2. FDW

## NOW:

### BASIC

1. WALK
2. Walk "Advance"
3. Advance applies to..
4. APD (audible)
5. FDW
6. SPC (Steady Ped. Clearance)

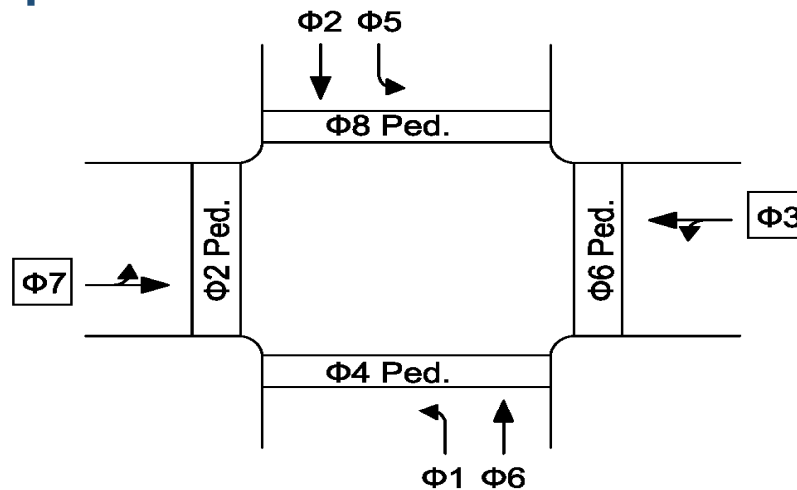
### EXTENDED PRESS

7. EP Walk
8. EP Advance
9. EP ADP
10. EP SPC

# PROPOSED MANAGEMENT TECHNIQUE

Placing Ped. Timings in separate phases and rings enables us to time them concurrently with multiple other Ped. and non-conflicting vehicle movements.

# 1. Enhanced Jacobson mode for 6 phase with split cross street

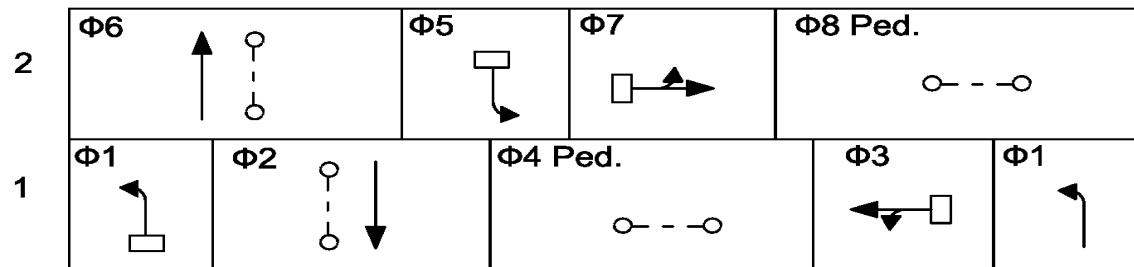


PHASE CONCURRENCIES:

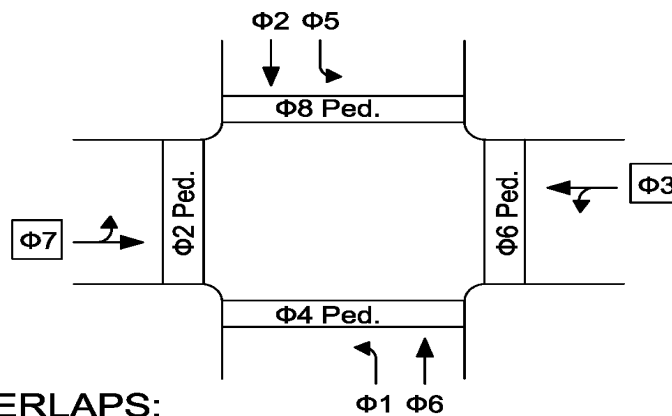
RING

	2	Φ6	Φ5	Φ7	Φ8
1	Φ1	v	v		v
	Φ2	v	v		
	Φ4		v	v	v
	Φ3				v

RING



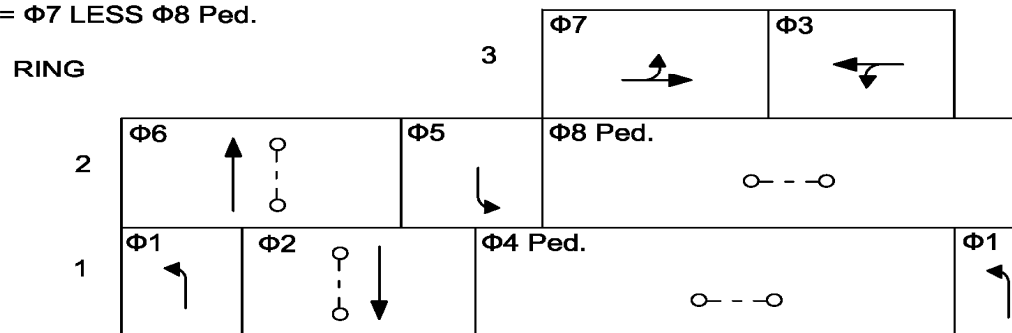
# 2. de Camp's Split Vehicle Phases w/concurrent Cross Street Peds.



**OVERLAPS:**  
 OLC = Φ3 LESS Φ4 Ped.  
 OLD = Φ7 LESS Φ8 Ped.

**PHASE CONCURRENCIES:**

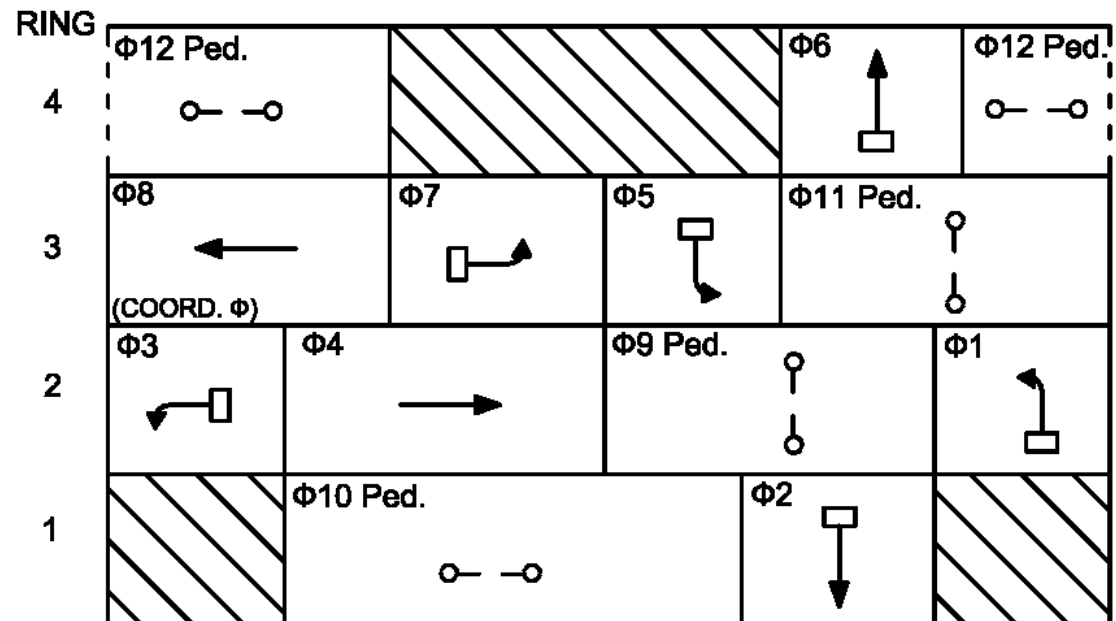
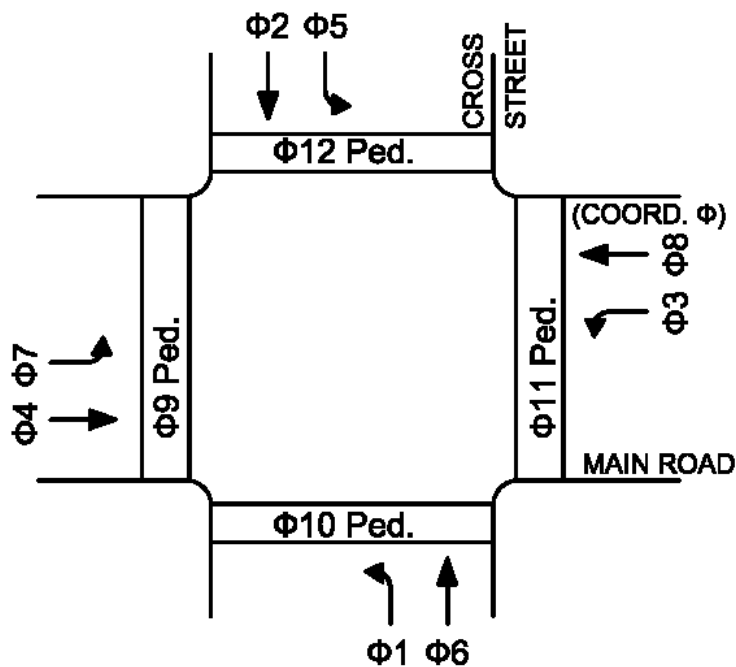
RING		PHASE CONCURRENCIES:				
		Φ6	Φ5	Φ8	Φ7	Φ3
1	2					
Φ1		v	v	v		
Φ2		v	v			
Φ4			v	v	v	v
Φ7				v	v	
Φ3				v		v



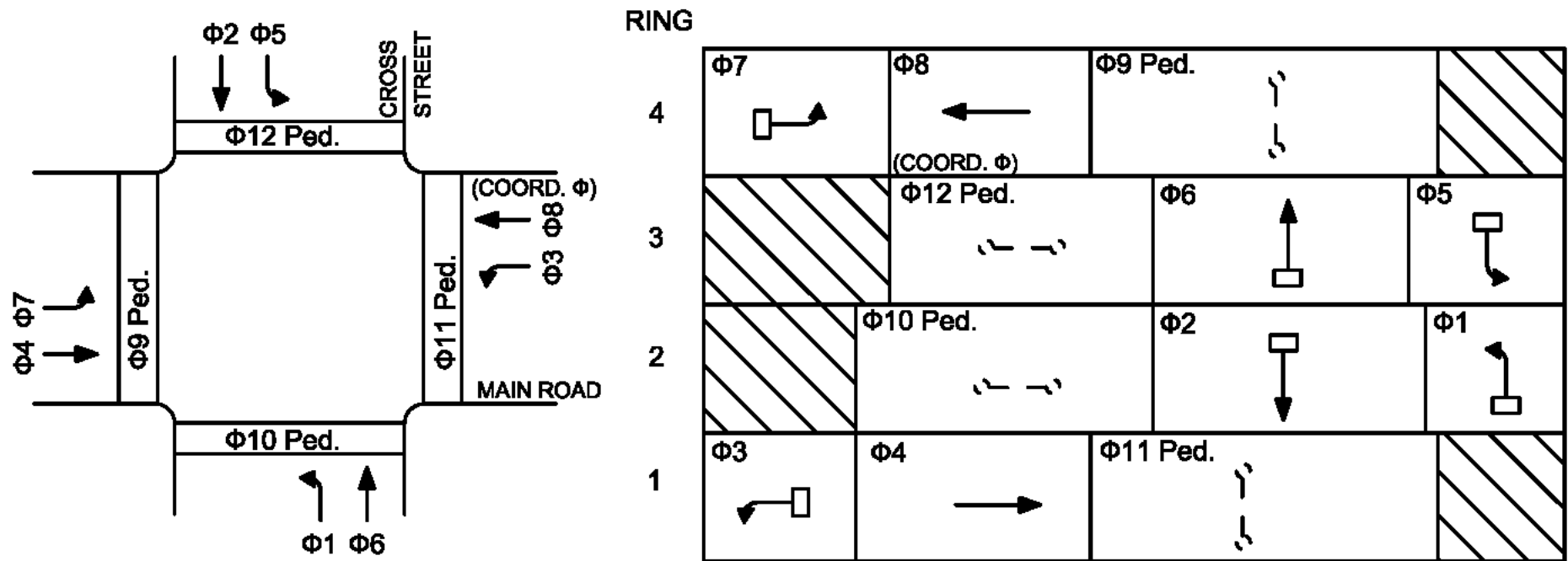


### 3. Quad Left w/ Lead-Lag LT Sequence

Peds on both streets able to Time Concurrently and with Cross Street LT Phases



# 4. Non Lead-Lag Long Ped. Sequence



# Non Lead-Lag Long Ped. Sequence

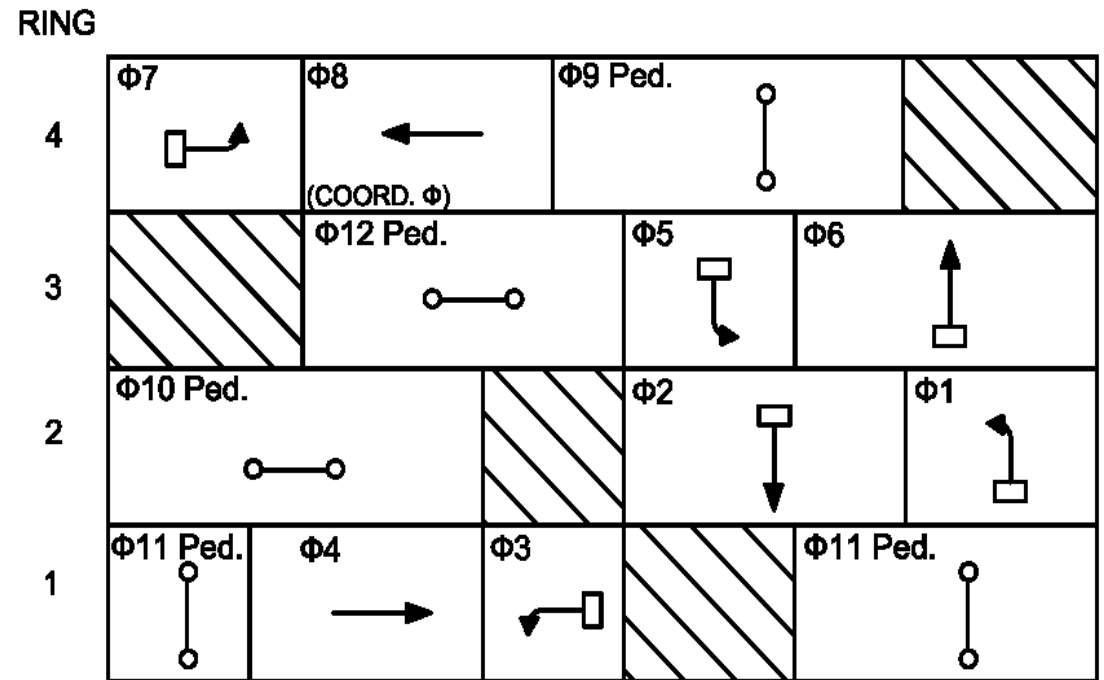
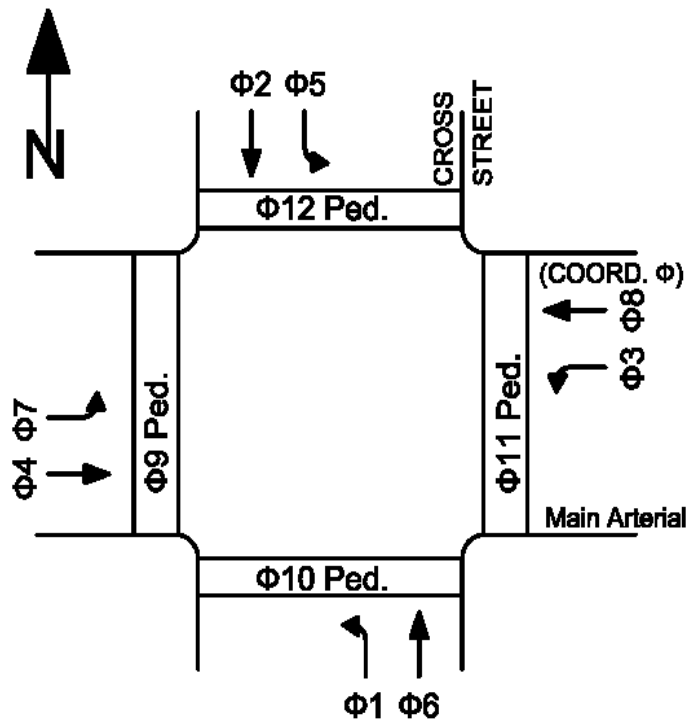
## Phase Concurrency Chart:

### Phase

### Time Concurrently With Phase:

1	5, 6, 11, 12
2	5, 6, 9, 11
3	7, 8, 9, 12
4	7, 8, 10, 12
5	9, 10
6	9, 11
7	10, 11
8	10, 12
9 -12	9 - 12

# 5. Quad Left w/ Lead-Lag Sequence and Peds timed w/ Main Rd. LT Phases



## Conclusion – These Techniques allowed for:

1. Greater use of Phase Numbers higher than 8 and Rings 3 & 4.
2. Utilization of NTCIP-standard phase concurrency tables, rather than barriers across all rings.
3. Thoroughly test-bench checked to insure against controller program bugs and unintended effects.
4. Implementation will vary based on specific equipment and controller software programs.