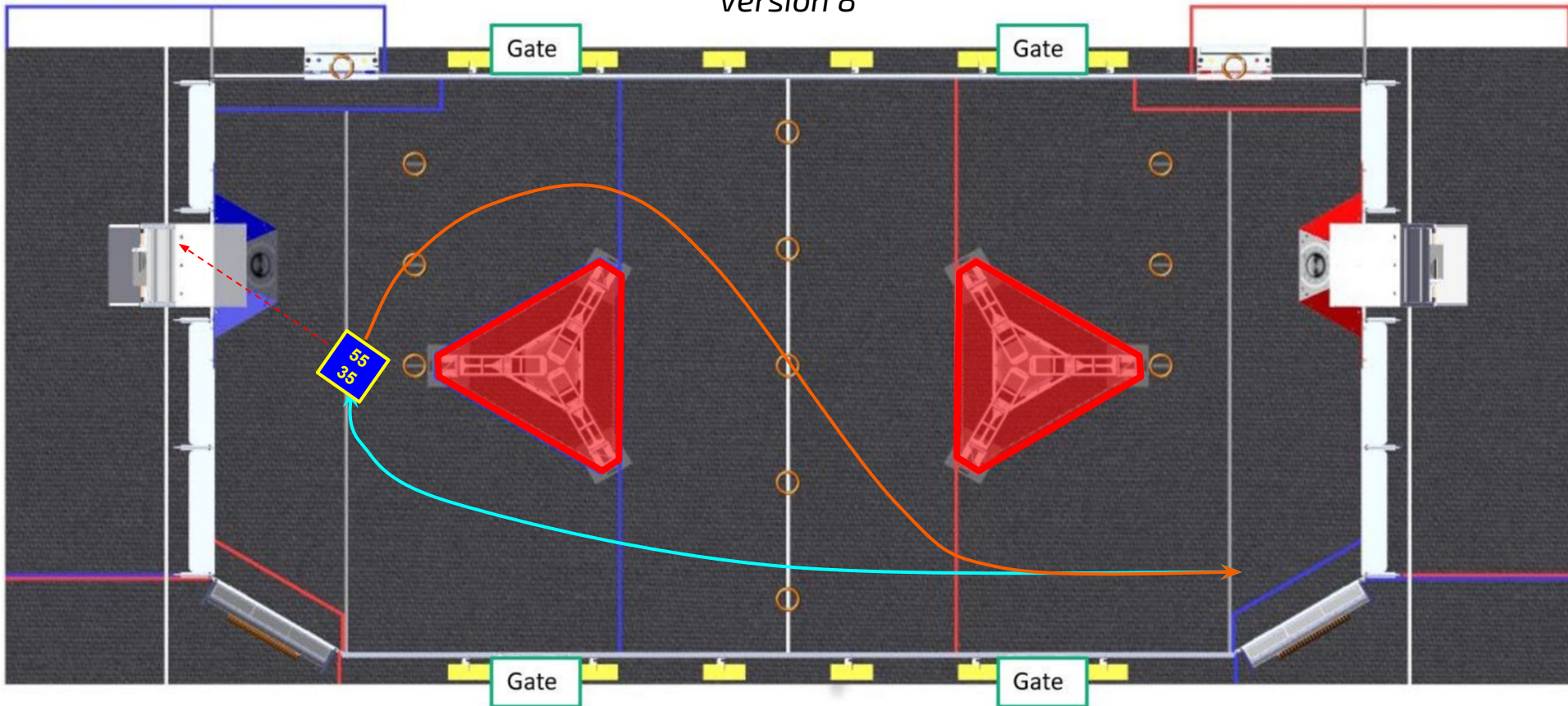


# ROBOTICS 2024 CRESCENDO COMPETITION PROGRAMMING PLAN

## TEAM 5535

*Version 8*



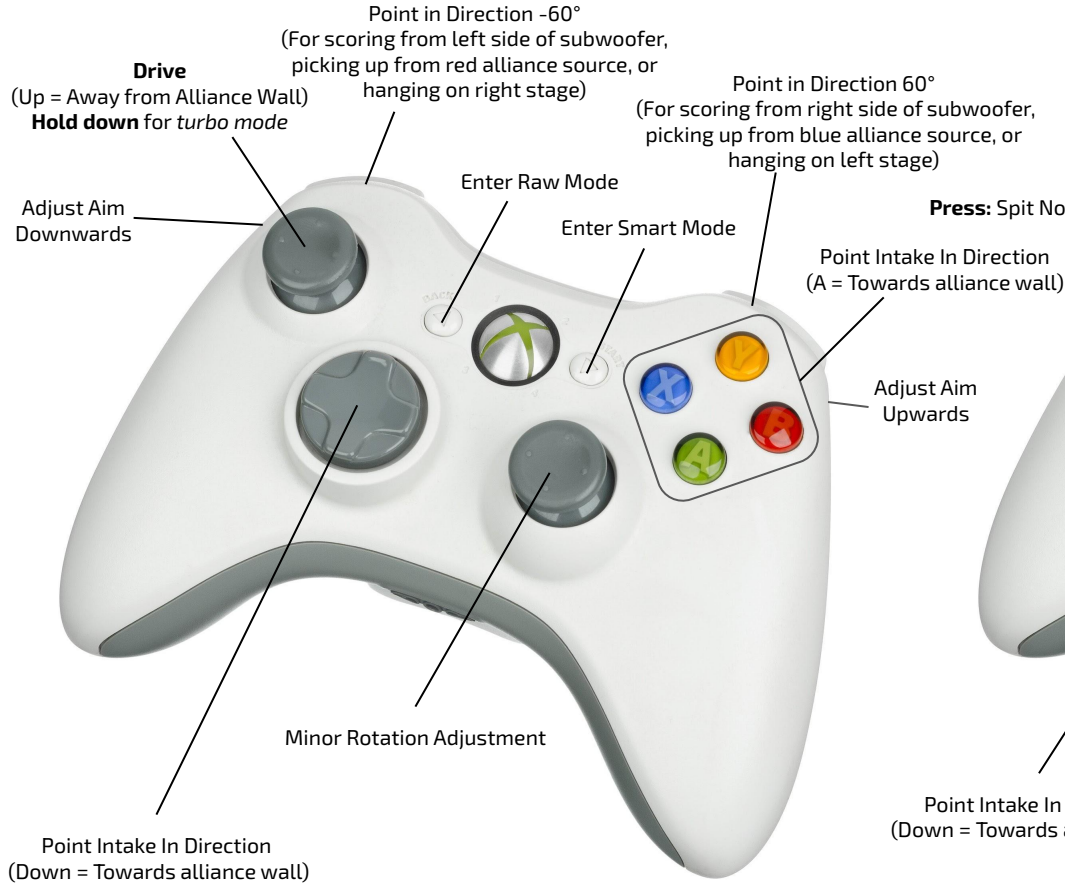
# Robot LED Color Meanings

What it means when the robot's LED strip is lighting up a certain color

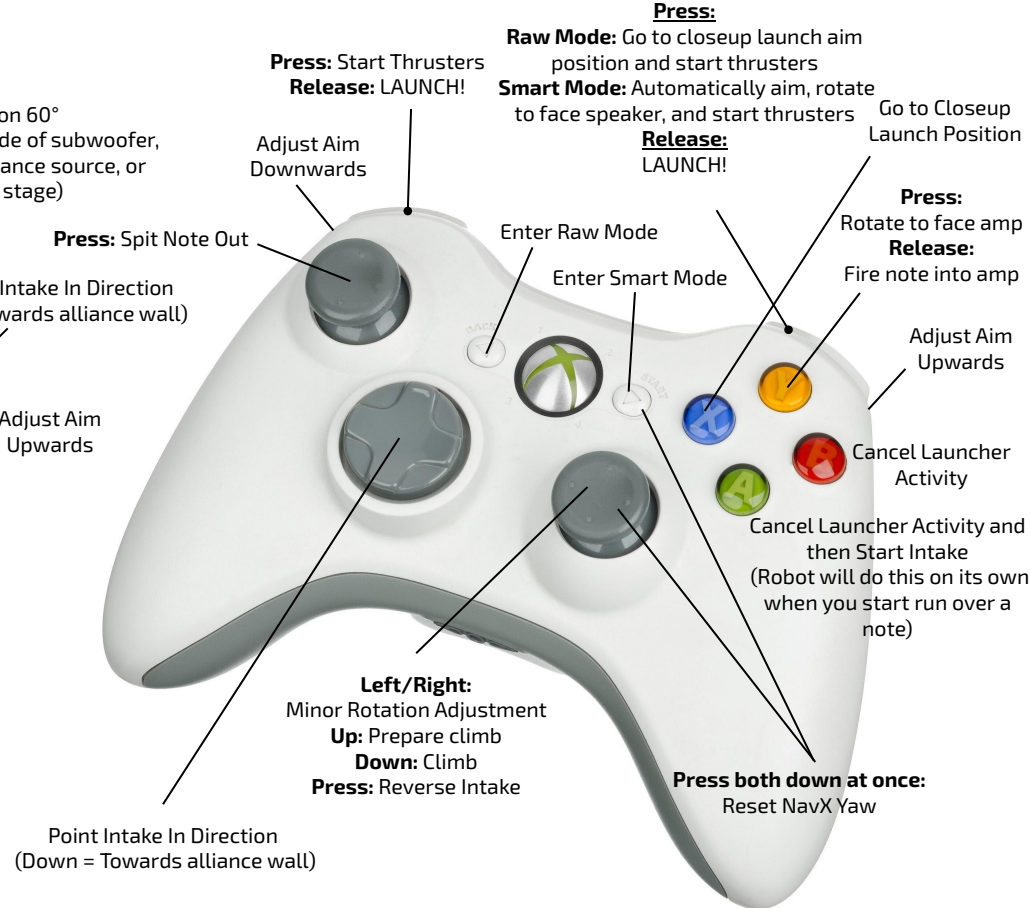
LED Color	Meaning
Orange	Robot is <b>intaking</b> a note (Useful when getting note from far away and unsure if it is reached or not)
Green	Robot is disabled and <b>safe</b> (When robot first booted, will light up green while blinking detected alliance color every 2 seconds)
Blue	Robot is in teleop mode while on the <b>blue alliance</b> and not holding a note
Red	Robot is in teleop mode while on the <b>red alliance</b> and not holding a note
Turquoise	Robot is in <b>final 20 seconds</b> of match and wants to climb
Yellow	Robot is <b>holding</b> a note and ready to launch
Magenta	Robot is <b>E-Stopped</b> or <b>A-Stopped</b>
White	Robot is in <b>test mode</b>

# Controllers

## Primary



## Secondary



## Points Chart

		MATCH points		Ranking Points	Cooperation Points
		AUTO	TELEOP		
LEAVE		2			
NOTES	AMP NOTE	2	1		
	SPEAKER NOTE (not AMPLIFIED)	5	2		
	SPEAKER NOTE (AMPLIFIED)		5		
STAGE	PARK		1		
	ONSTAGE (not SPOTLIT)		3		
	ONSTAGE (SPOTLIT)		4		
	HARMONY		2		
	NOTE in TRAP (max. 1/TRAP)		5		
	Cooperation Bonus				
MELODY	At least 18 (15 if Cooperation Bonus) AMP & SPEAKER NOTES*		1		
ENSEMBLE	At least 10 STAGE points and at least 2 ONSTAGE ROBOTS*		1		
Tie	completing a MATCH with the same number of MATCH points as your opponent		1		
Win	completing a MATCH with more MATCH points than your opponent		2		

## Autonomous Plan

- 1) Place the robot with the launching side up against one of the sides of the subwoofer
- 2) Select the starting position from Shuffleboard
- 3) Enter a string of text into the "Auto Instructions" blank in Shuffleboard, using letters for designating notes to collect and dashes for scoring them. (Example: "a-c-e" gets note a, then scores it, then gets note c, then scores it, and then gets note e.)



# Autonomous “Auto Instructions” String Rules

-

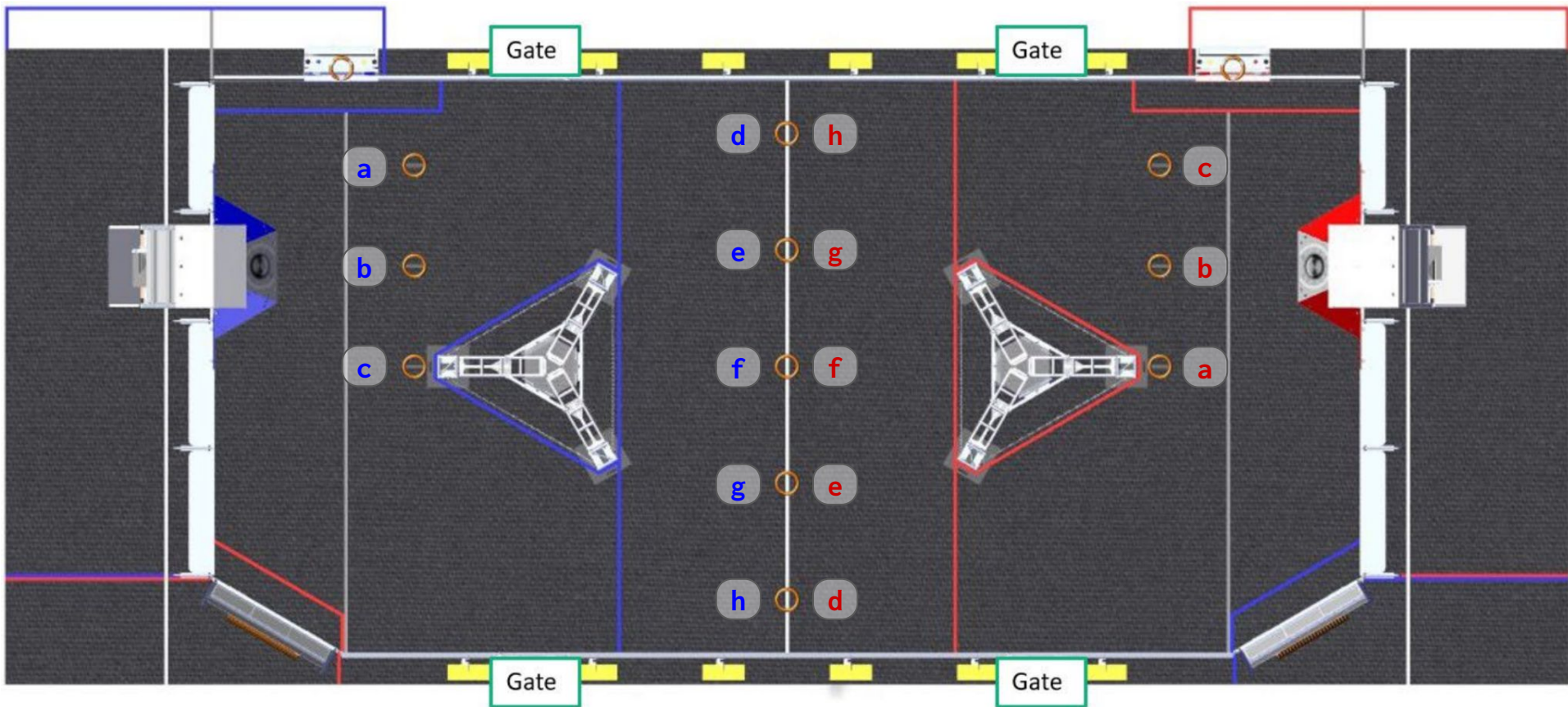
Score Note From Max Distance

+

Score Note Quite Close Up

c

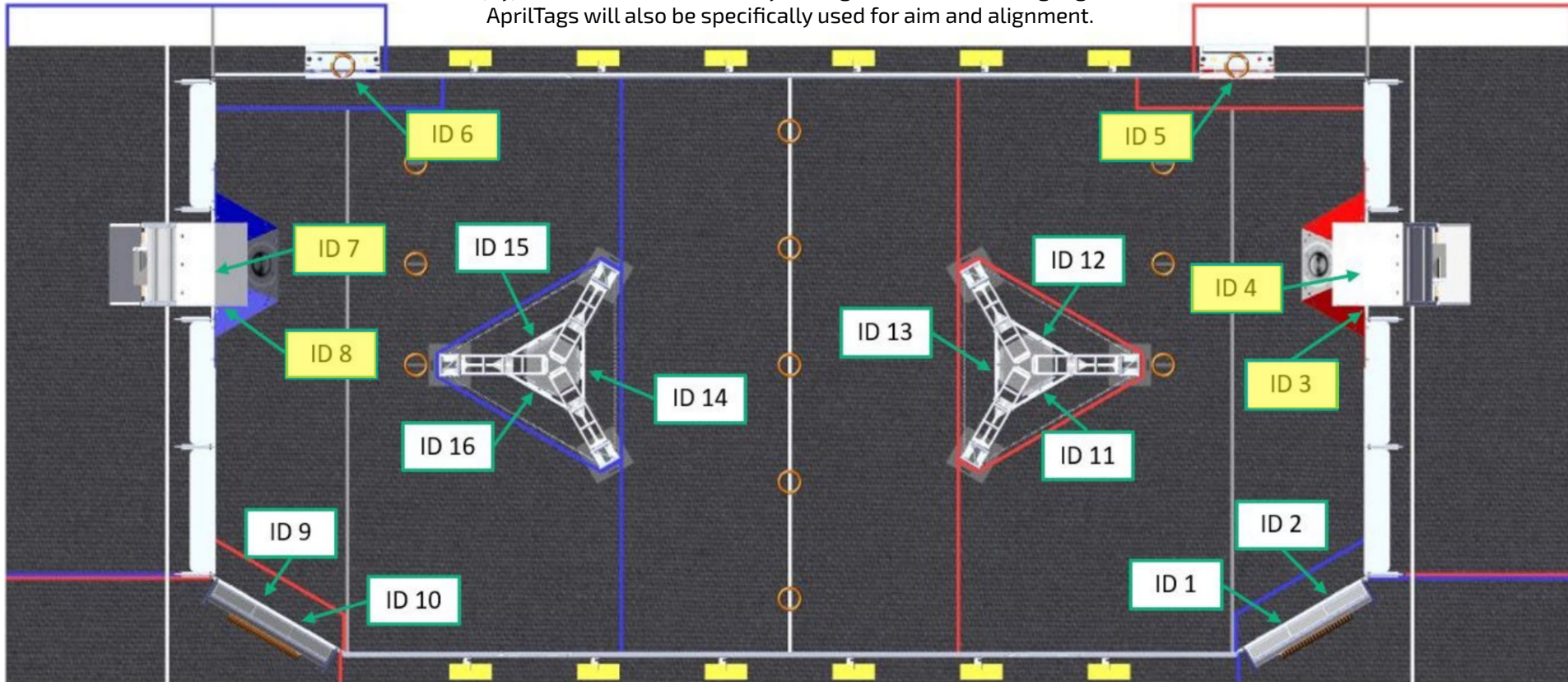
Collect Note C (Do not capitalize)



# AprilTag Locations

(Most Important Tags Highlighted)

All AprilTags on the field will be utilised by the robot to perpetuously detect its (x,y) location on the field and yaw angle. However, the highlighted AprilTags will also be specifically used for aim and alignment.



# Limelight Pipelines



#	Name	Purpose
0	View	For livestreaming the robot's view to the driver; optimal viewing settings
1	General AprilTag	Detects closest AprilTag and returns the ID; to help with location detection
2	Note Detector	Detects the orange notes for autonomous collection purposes
3	Blue Speaker	Detects point to aim at in blue speaker based on AprilTag 7
4	Red Speaker	Detects point to aim at in red speaker based on AprilTag 4
5	Blue Speaker Side	Detects AprilTag on left side of blue speaker (ID 8) for more accurate calculation of robot position relative to speaker
6	Red Speaker Side	Detect AprilTag on right side of red speaker (ID 3) for more accurate calculation of robot position relative to speaker
7	Blue Amp	Detects AprilTag 6 (above blue amp)
8	Red Amp	Detects AprilTag 5 (above red amp)
9	Lighted View	For livestreaming the robot's view to the driver with the limelight headlights on



# Robot CAN IDs

