

**IndyCar Circuits  
Expansion Pack**

**from  
Papyrus Publishing, Inc.**

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## Installation

### Installing IndyCar Circuits:

1. Insert Disk 1 in disk drive.
2. Type **A:** <enter> to change to drive A: (substitute **B:** for drive B:)
3. Type **INSTALL** <enter>.
4. Follow the instructions as they appear on your screen, choosing all or some of the tracks to be installed.

### Running IndyCar Circuits:

1. Type **CD\INDYCAR** <enter> to change to the game directory. **Note:** If you installed IndyCar Racing to a different directory, substitute it here.)
2. Type **INDYCAR** <enter> to start the game.
3. Choose any race option from the main menu. The new tracks will appear in an alphabetical listing. When competing in a **Championship Season** the new tracks will be raced in the order of the 1993 season.

### New Features and Utilities:

Some of the new features and utilities contained in this Expansion Pack must be used outside of the program. Exit the game, and make sure you are still in the INDYCAR game directory before attempting to launch them. Consult the appropriate instructions found in this manual for complete details on the start-up and usage of new features and utilities. The installation program will automatically update your INDYCAR.EXE file to version 1.04.

## NEW FEATURE- TIME ACCELERATION

At any time while racing, you can press the **escape** key to momentarily pause the action and reveal a **Current Standings** screen. While viewing this list, pressing the “A” key will automatically launch the simulation into accelerated time mode, making it possible to see the final results of your race unfold quickly. Time acceleration is not available in **Preseason Testing** or **2-Player Race** modes.

**Note: Entering accelerated time mode automatically withdraws your car from the race permanently, and your final result is listed as a “DNF” or, “Did Not Finish.” You cannot drive a few laps, enter accelerated mode for a while, then rejoin the race in your car.**

This feature is especially useful when attempting a long race that you fail to finish, due to an accident. You might be curious to see your position in the final standings.

Your final position in the standings will be calculated normally, based on how many laps you completed. For instance, you crash hard with twenty laps to go at Michigan. Fourteen of the thirty-three starters are already out with various failures. Assuming that all other cars finish the race (and complete more laps than you did) you would wind up nineteenth. If one of the remaining cars was not able to surpass your effort, then you would finish eighteenth, and so on.

When you enter accelerated time, you can see the entire race unfold in a matter of minutes, right on the standings screen. You’ll know who’s in the pits, and when. You’ll see all of the lead changes shuffle up and down the standings board. You can press **escape** again to pause the accelerated mode, and view actual replays of the race, by selecting **Replay**. Then, choose **Resume Racing** to re-enter accelerated mode.

### New Feature- RESULTS.TXT File

If you've ever wanted to save the final results of your greatest triumphs in an IndyCar , now you can! Each time you exit a race, a **RESULTS.TXT** "ASCII" file is automatically created by the game. This file contains all the key information about the most recent race run, such as weather, final standings and fastest lap.

The program writes a new file each time you exit or finish **Race**. If you'd like to preserve this data, you'll need to do so before you start another race. You can copy this file to another directory or floppy disk. You should rename this file first, so that you can store many results files in the same directory or floppy disk.

You may want to create a subdirectory on your hard drive for these results. To do this within the IndyCar directory, exit the game. Assuming you are still in the IndyCar Racing directory, type MD WINS (or whatever you choose to name it), and press **enter**." Copy the RESULTS.TXT file into the new subdirectory by typing the command, COPY RESULTS.TXT C: \INDYCAR\WINS (or the path of the directory you'd like to store it in), and press **enter**." Rename the results file by entering the subdirectory it is stored in. Type CD WINS (or the appropriate directory name) and press **enter**," then type RENAME RESULTS.TXT WARNACO.TXT (or whatever you choose to rename it) and press **enter**." Consult your DOS manual, or refer to the **Technical Support** section of this publication for additional assistance.

You can save as many RESULTS.TXT files as you wish (as long as you rename them). Results are written as soon as you leave the track, regardless of the amount of the race completed. TXT files can be viewed in most word processors.

When competing in a Championship Season, IndyCar Racing also creates a "SEASON.TXT" File that can be utilized in the same manner. This is a larger file, containing the results from individual races, as well as their affect on the point standings.

### **New Feature- Replay Editor**

Ever save a five-minute replay because of a three-second pass? With the new Reply Editor, save your replay while in the IndyCar Racing program. Note the beginning (in time) and ending (out time) points of the replay segment you wish to keep. The IndyCar Racing replay counter displays times in the format HOURS:MINUTES:SECONDS.FRAMES. Once you have determined the in and out times of the footage you're saving, exit to DOS from IndyCar Racing.

To create the new replay, type the following:

```
CUTRPY [TRACKNAME] [OLD REPLAY NAME] [NEW REPLAY NAME] [IN TIME] [OUT TIME]
```

**Note:** Input all times in the format HOURS <space> MINUTES <space> SECONDS <space> FRAMES.

For example, you're racing at New Hampshire and you've just saved a four-minute replay called "GOODPASS." You really only want to keep a nine-second piece that contains a brilliant pass. While viewing the replay from within the IndyCar Racing program, jot down the in and out times of the nine-second segment. We'll assume for this example that the portion you'll save begins at 0:02:16.02, and ends at 0:02:24.14. You'll call your edited version "WHIPPED." Exit IndyCar Racing, and type the following:

```
CUTRPY NWENGLND GOODPASS WHIPPED 0 2 16 2 0 2 25 14
```

You now have a nine-second replay called “WHIPPED,” that contains only the footage of the pass.

Note that when naming your files, DOS restrictions apply. File names cannot exceed eight characters. When editing replays, you do not need to type in file extensions, however; the **Replay Editor** will automatically tag the appropriate extension (.RPY) on each new replay file you create.

Hint: You can overwrite long replays with edited versions by entering the same name for the old file and new file. This will cause the Replay Editor to replace the old file with the new one, thus saving precious disk space. In the previous example, we named the new file “WHIPPED.” However, by naming the new file “GOODPASS,” the original four-minute replay would be replaced by the new nine-second, edited portion.

Important Note: When using the Replay Editor, you must enter the track name according to its designation within IndyCar Racing. Some track file names are abbreviated to conform to the eight-character limit DOS requires. The abbreviated name of each track available from Papyrus is listed below:

<b>AUSTRAL</b> .....	Surfers Paradise, Queensland, Australia
<b>CLEVELAND</b> .....	Burke Lakefront Airport, Cleveland
<b>DETROIT</b> .....	Belle Isle Park, Detroit
<b>ELKHART</b> .....	Road America, Elkhart Lake
<b>INDY</b> .....	Indianapolis Motor Speedway
<b>LAGUNA</b> .....	Laguna Seca Raceway
<b>LONGBEACH</b> .....	Long Beach
<b>MICHIGAN</b> .....	Michigan International Speedway
<b>MIDOHIO</b> .....	Mid-Ohio Sports Car Course
<b>MILWAUKEE</b> .....	The Milwaukee Mile
<b>NAZARETH</b> .....	Nazareth Speedway
<b>NWENGLND</b> .....	New Hampshire International Speedway
<b>PHOENIX</b> .....	Phoenix International Raceway
<b>PORTLAND</b> .....	Portland International Raceway
<b>TORONTO</b> .....	Exhibition Place, Toronto
<b>VANCOUVR</b> .....	Pacific Place, Vancouver



### **New Feature- Setup Print Utility**

The **Setup Print Utility** allows users to create text files that contain IndyCar setting in an easy-to-read format. The files can then be used in word processor documents or modem communications (electronic mail).

To use the **Setup Print Utility**, exit IndyCar Racing or change into the INDYCAR directory from DOS. Type the following:

```
SHOWSTG [TRACK DIRECTORY NAME] [SETTING NAME]
```

to display only on screen, or:

```
SHOWSTG [TRACK DIRECTORY NAME] [SETTING NAME]>[NEW FILE]
```

to create a new text file.

For example, suppose you have a car setup for Michigan International Speedway, saved as "DRYRACE.STG." To create a new text file called "DRYRACE.TXT" that contains all of the setup information, type:

```
SHOWSTG MICHIGAN DRYRACE > VERYFAST.TXT
```

To view the "DRYRACE.STG" setups without writing a text file, type:

```
SHOWSTG MICHIGAN DRYRACE
```

The output will be written only to the screen. To print the car settings on your printer, specify "LPT1" as follows:

```
SHOWSTG MICHIGAN DRYRACE > LPT1
```

No file extension is required by the **Setup Print Utility**. You must be in DOS, and inside the INDYCAR directory in order to use the **Setup Print Utility**.

## 2-Player Racing Update

IndyCar Racing allows two players to compete against one another via the Two Player Race menu. Each player will need a computer, with an official copy of IndyCar Racing installed on each machine. They must be connected using a null-modem cable, or between two modems running at 9600 baud.

### Setup Menu

This menu allows you to specify/change various communication settings to suit your equipment.

**COM PORT:** This is the serial port which the computer uses to communicate with either the modem or the other computer. If you change the COM PORT, the program will automatically select the normal IRQ to be used for that port; if you are using a special IRQ, specify it after selecting the COM port.

**IRQ:** The computer uses this interrupt to communicate. It should not be used by anything other than your modem. If you change the COM PORT, the program will automatically select the normal IRQ to be used for that port; if you are using a special IRQ, specify it after selecting the COM port.

**MODEM:** This is a toggle between the two connection methods *Direct* or *Modem*. Press <enter> to change it.

**INIT STRING** See below. This is the most difficult and important configuration *It is not required for Direct Connect.*

**DIAL PREFIX** This is the command sent to the modem just before dialing. The dial prefix is normally "atdt", but you may want to have a commonly dialed number or calling card access number here. (E.G. "ATDT9,555-1212") A comma tells the modem to delay for a period of time, usually two seconds. *It is not required for Direct Connect.*

**DIAL SUFFIX** This is the command sent to the modem just after dialing. The dial suffix is usually "^M", which completes the dialing. *It is not required for Direct Connect.*

## Initialization String

The most common modem connection problems encountered in IndyCar Racing are caused by an incomplete initialization string. **The following features *MUST* be disabled in order to race over modems: data compression, error detection, and error correction.** You must be sure these items are off, otherwise you will either not be able to connect or you will experience erratic car movement. Use the modem initialization string in the **2-Player Race/Setup/Init String** menu to disable these features. You must force the modem to connect only at 9600 baud (many modems would try to connect at a different speed if not otherwise specified). Below, we have included some sample initializations strings for several modems. Although we cannot provide initialization strings for all modems, follow these general guidelines to set up your modem if it is not on the list:

1. **Make sure that data compression is off**
2. **Error detection is off**
3. **Error correction is off**
4. **You are connecting at 9600 baud only**

Consult your modem manual to find the required modem commands. If you cannot find the proper commands in the modem documentation, please call the modem manufacturer for assistance.

### Sample Init Strings

Modem Make	Recommended Initialization String
GatewayTelepath	at&fm~~~atn0s37=9&c1&d2&k0&q0%c0m
Intel 144/144e	at&fm~~~at&c1&d2%c0-j0m
Practical Peripherals PM14400fxmt	at&fm~~~atn0s37=9&q6m
SupraFAXModem	at&fm~~~atn0s37=9&c1&d2&k0&q0%c0m
USRobotics Sportster	at&fm~~~at&c1&d2&k0&m0&n6m
Zoom/FaxModem	at&fm~~~atn0s37=9&c1&d2&k0%c0m

The tildes (~) will appear as solid, upside-down triangles on your screen and function as a pause between commands. The “M” in the initialization string completes a command to the modem (like pressing <enter>), and must be used after each “AT” command string, as in the examples.

Modern modem features such as data compression and error correction interfere with communications within the simulation because they delay the overall connection, resulting in poor gameplay.

### Connection

One player should choose **2-Player Race/Answer** and the other should choose **2-Player Race/Dial**. The dialer’s machine will dial, allowing two minutes for the answerer’s machine to connect with it. When the two modems connect, a phone icon will appear in the lower right corner of the screen. If it is blinking, the connection is not perfect. If it disappears for more than five seconds, the connection will be broken. The transmission delay indicates the one-way transmission time from computer to computer. A good connection will have a delay of 0.07 or 0.13 seconds. The longer the delay, the more affected gameplay will be (car’s movements will be more erratic). The delay is caused by the phone system or by an incomplete (and incorrect) initialization string. The problem might be solved by redialing.

**Hints:** You can keep a commonly dialed number in the prefix string. You can race against the other player without any computer drivers by setting your number of opponents **Options/Realsim/Opponents** to 1.

## Talk Mode

When connected to another computer, you may attempt to talk with the other player by pressing the “T” key. You should be at the **Race Weekend** menu (which has **REPLAY/GARAGE/etc.** on it), driving, or watching the replay. If the other player is ready to talk, both players’ names will appear in the middle of the screen, with areas above and below provided for typing. When you are finished talking, either player can press ESC to end the chat. If the other player is not ready to talk, you will receive a message to that effect.

## 2-Player Play Differences

It is important that the CARS line in the <track>.TXT file be the same for both the dialer and answerer. If you have not modified this file, this will not be a problem.

Some cars may be omitted from the replay on the dialer’s machine. These cars will disappear when being viewed. We recommend just watching your own car if you are the dialer.

The smoke and dirt effects viewed on the dialer’s screen are shown only for the dialer’s car. The smoke and dirt effects on the answerer’s machine do not appear on the dialer’s car.

No RESULTS.TXT file is generated for the dialer. The answerer’s RESULTS.TXT may list Fred Jones rather than the dialer’s name. (If you select another track but do not race on it before disconnecting, the RESULTS.TXT file will have the correct name for the dialer.)

Some options are controlled by the answerer, such as track selection, weather, yellow flags, pace lap, and number of cars. Some of these options are saved on the dialer’s machine after disconnecting, such as the chosen track and number of cars.

Though you will be unable to pause the game while driving in 2-Player Race, you can escape out to the menus.

## Troubleshooting 2-Player Racing

1. If when you select **Dial** the computer responds with “Make sure your modem is on,” check to make sure the Com Port setting is the correct one and that your modem is turned on (internal modems will always be on).
2. If when you select **Dial** the computer responds with “Unable to initialize modem,” your initialization string is incorrect for your modem. Consult your modem manual or modem manufacturer. Make sure you have “^M” at the end of the command, as in the previous sample initialization strings. Also, be sure to include the three tildes(“~~~”) between each command ending in “^M”.
3. If when the modem connect, the transmission delay is large, this probably means that the initialization strings on one or both of the modems are incorrect.
4. If you are still unable to connect, a sanity check of the modem communications is possible using a regular communications package such as Telix, Procomm, or the Windows’ Terminal program. Connecting via one of these packages does not guarantee that communications will work in IndyCar Racing, but if you are unable to connect in this fashion, you will be unable to connect in IndyCar Racing.
5. If both players have a DOS communications package, it should be possible to connect using that package first, then run IndyCar Racing and connect using the Direct connect option. You must still disable advanced modem features such as data compression and error correction, and you must operate at 9600 baud. This is a complex procedure, and is recommended only for advanced users who are having trouble connecting within the IndyCar Racing program itself.

**Surfer's Paradise,  
Queensland**

**Thunder Down Under.**

The chicanes at Surfers Paradise always complicate the passing picture. They require accurate gear changes, with the barest amount of braking to knife a clean line through.

## **Australian IndyCar Grand Prix**

**Circuit Type: Temporary Sheet**

**Circuit Length: 2.795 Miles**

**100% Race Distance: 181.675 Miles (65 Laps)**

A picturesque racing venue on the Gold Coast of Australia, Surfers Paradise hosts one of the most competitive events on the IndyCar circuit. Though laid out on streets, the course resembles that of a pure formula race track. It is a true driver's passion, a stop eagerly anticipated by the teams and fans alike. The course is comprised of five distinct segments linked by chicanes, producing a total of sixteen turns. Weather varies from clear and warm to wet and windy, leaving many a qualified over what setup to race with. The pavement itself is relatively flat, and narrow at some points, wide at others.

Finding Surfers Paradise dry on race day means you'll want little downforce on your IndyCar. Run the gears tall and loose so you'll have plenty of top speed at your disposal on the lone straights. Since some of the chicanes can be taken quite hard, cope with the tighter corners by adapting your driving style rather than building a slower setup. Plan to spend a few laps experimenting with different degrees of roll bar stiffness, until you find the positions best suited to you. Follow the same pattern to arrive at shock absorber settings. If you find yourself overreacting in the turns, soften them up a bit to make the car feel smoother.

If you're caught in an Australian rain, you'll want to mount the rain tires and increase the front wing somewhat. You will need to drop an additional gear in almost every turn, and your brake points will occur about 50 meters earlier than on a dry surface.



Shortly after you leave the starting line, the road makes a slight arc to the left. At Ferny Avenue, you'll encounter the first chicane, a severe left-right-left combination. Making a clean, well-rehearsed getaway through this chicane is a key to fast lap times here. Continue to accelerate full as the course snaps slightly back to the right in the form of a minor chicane at Main Beach Parade. Finally, after bending slightly right, the straight comes to an abrupt end as you dart left onto View Avenue. This is a very narrow, tricky left turn that will bring your IndyCar down to first gear. Often there is only one good line through this corner, and passing in the turn itself is quite difficult.

View Avenue is a short stretch that will allow you to climb only up to third gear before finding another harsh left onto the back straight. Again you'll put the car in first and take your time until you hit the apex of the corner.

Along the backstraight now, you are driving just a few scant yards away from the Pacific Ocean, as it runs parallel to the track. Apply full throttle through here; you'll reach sixth gear long before you engage the mean left-right combination at the intersection of Higman Street, where you'll need to slow down briefly to get through.

Stay on the power as the street leans right, then left just a touch. Another chicane again looms just ahead, and you'll need to slow to third and coast across this one, again looking to cut as straight a line as possible through. Out of the chicane and on the gas, your next stop will be a tight left onto Breaker Street. After slowing to second for it, it's up two blocks to Serisier Avenue, a bold left-right combination onto Hill Parade.

As you power through Hill Parade, the course feints to the right just before a hard, first-gear left that circles you back out onto the front straight. It is at the little right that you will begin braking and downshifting to first for this segment. Once on the narrow front straight, enjoy the long straight to the start/finish line. Paradise is supposed to be easier than this!

**Burke Lakefront  
Airport**

**Earn Your IndyCar Wings  
At The Airport In Cleveland.**

Burke Lakefront Airport in Cleveland owns the distinction of hosting the fastest road course in IndyCar racing. After all, the pavement was designed to accommodate speeds of over 400 mph! Passing here is easy, essential and entertaining.

## **Grand Prix of Cleveland**

**Circuit Type: Temporary Road Course**

**Circuit Length: 2.369 Miles**

**100% Race Distance: 201.37 Miles (85 Laps)**

Take a wide, flat asphalt surface, add a few extra corners, throw in lots of runoff area and you have Burke Lakefront Airport, the fastest road course on the IndyCar circuit. The flat layout, unabated by city skylines, offers a pristine view of the entire track. The racing line varies with the track conditions, but there is never a shortage of real estate to overtake on. It is interesting to note that this track is an actual working airstrip, until it is closed for the races each July.

In dry weather, you'll probably use less wing on this road course than on any other. Make sure you've got tire compounds that can survive the heat and high speeds. Of the ten turns found at Cleveland, only one bends sharper than ninety degrees. The other turns are all faster, and the long straights call for a tall top gear. Adjust sixth gear first to obtain as much speed as possible on the longest straight, then work backward through the gearbox to achieve a natural flow of acceleration. It may be more sensible to move brake bias toward the rear a few degrees to help keep the rpms up in the quicker corners.

In wet weather, you might be tempted to raise the wings for more downforce, but don't do it! The wide track surface is more forgiving, so a little hydroplaning might not prove so costly. Instead, alter your driving style to account for the rain. Put the rain tires on and do the rest by braking into the corners earlier, and dropping one or two gears lower in the tighter turns. The absence of brake markers here won't make it easier, but the track itself offers few surprises.

Away from the start/finish line, you are actually screaming down runway 24L at speeds faster than small planes require for takeoff. At the end of this straight awaits the tightest bend on the track, a stiff right-hander. You'll need to drop gears to the bottom and slow considerably to make it. It is the only corner at Cleveland that will force your car into low gear.

As you exit turn one, accelerate hard through turn two, a right that leads you out onto runway 6L. You will most likely be able to continue full acceleration until you arrive at turn three, a gradual, ninety degree bend right. There is a short chute between the third and fourth turns, and it should not be wasted. After a short burst, take the fourth turn, a left hand corner that dumps you out onto runway 6R. This is the first left you will encounter, but there is another one just like it following the long straight.

When you get to five you'll slow down for the left turn, which precedes the slower portion of the circuit. You are then challenged by four consecutive right turns.

Six, seven and eight are identical with the exception of the narrower surface branching off of number seven. The three corners are all second gear bends adjoined by straight, fast chutes.

As you come out of the eighth turn, mash the accelerator and hurtle your IndyCar down the longest straight on the track. Do you need to pit? Check your gauges and make your decision now! Otherwise, draft anybody and everybody.

Near the conclusion of the long straight, set up on the outside for an early apex into turn nine which connects to turn ten via a short diagonal strip of track. This right-left combination should be practiced to perfection. When you hit it just right, you will gain a considerable advantage in acceleration onto the long, main straight.

## **Belle Isle Park**

### **Motorcity Madhouse.**

One of the newest courses on the IndyCar circuit, Belle Isle Park consists of claustrophobic, twisty bends and a few fast corners. The island itself is situated in the middle of the Detroit River. The track is difficult to overtake on, often making race outcomes in doubt until the final lap.

## **Detroit Grand Prix**

**Circuit Type: Temporary Street**

**Circuit Length: 2.1 Miles**

**100% Race Distance: 161.7 Miles (77 Laps)**

Belle Isle Park presents one of the tougher road circuit challenges found in IndyCar racing. The pavement is narrow in many sections, with almost no runoff area to speak of. Intense concentration and a quality racing setup are the keys to mastering this layout, and any win earned here will require supreme patience. The island's heat usually bites hard, further complication the grip and downforce picture.

Due to the number and variety of corners at Belle Isle, you'll probably need more downforce than usual to get the job done. Soft tires for extra grip can safely be mounted on all four corners of the car. Using negative stagger settings is not an unthinkable proposition, since most of the tougher turns are to the right. The middle gears should roar with acceleration to help get the car back up to speed out of the turns. The tradeoff is a sacrifice of some top speed will be rpms well-spent.

Wet weather creates a hair-pulling drill of trying to find more downforce for the racecar. Too bad you can't set your wings at 24 degrees! Taking the turbocharger down a couple of notches may help curb the temptation to punch the accelerator. Softening the suspension will also add some measure of forgiveness when putting your chassis to the test. Remember, driving with much finesse and patience at Belle Isle will keep you in the race and out of the soup!

Beginning at the start/finish line, turn number one requires a move down to a low gear, but as you turn in get back on the power quickly. The second corner bends left, and can be taken with no more than a slight lift off the accelerator. Under the bridge and into turn three, you'll be back down to first or second as you swing right. Keep the revs up so that the next segment can be hit hard, since it doglegs slightly left.

Turns four, five and six are knit tightly together, and present quite a challenge with traffic in your path. The right-left-right combination can best be handled by applying lots of power, but staying in lower gears until you are in the chute between six and seven.

When you arrive at turn seven, you'll need to brake hard as you make the slow turn right. At the apex of this corner, get on the gas quickly and enjoy one of the few moments when this track really turns you loose. The roadway drifts left, then a little sharper to the right, but the entire segment can be driven flat out. You'll go down to second or third as you round turn eight, the right-hander at the casino.

Nine, ten, eleven and twelve take you on a circuitous route around the corporate suites. Turn nine is a sharp left, followed by ten, a moderate left. Eleven also bends slightly left, and the three corners form a progression that allows you to pick up a little extra speed until you hit turn twelve. The twelfth corner is nearly a right hairpin, bringing the car down to minimal speed as you crawl through.

Turns thirteen and fourteen both point to the right, initiating your blast down the main front straight near the pits. They are faster bends, and out of fourteen you should have the gas wide open. Drafting and passing any would-be victims should be done to the left, in order to avoid traffic at the pits.

## **Road America**

### **This Summer, See The Lake At 180 MPH.**

Track speeds and drivers' nerves are always at a fever pitch in Elkhart Lake. A lengthy circuit with lots of runoff and plenty of passing opportunities, Road America stands out as one of the premier racing locations in the United States. The action is hot and the mood is wild as IndyCar's best go wheel-to-wheel in Wisconsin!



## **Road America**

**Circuit Type: Road Course**

**Circuit Length: 4 Miles**

**100% Race Distance: 200 Miles (50 Laps)**

If you prefer fast road courses, combined with changes in elevation and a variety of bends, look now further. Elkhart Lake summons all of a driver's skills, with the longest course on the IndyCar calendar. Mention of Formula One racing returning to the states usually includes Road America as a possible site. Most drivers really like the sprawling course, despite the danger of running out of fuel on the wrong side of the track. The pits are located at the top of a rise, so coasting in with an empty tank is also risky. However, there's no better bratwurst and corn on the cob in the country than at Elkhart Lake, and the facility can accommodate the largest of crowds.

Before setting your IndyCar up for Road America, bring your turbocharger setting down to six or seven. Since the circuit is four miles long, fuel efficiency is all too important to be overlooked. Racing with a lower boost setting will improve your fuel economy and squeeze extra laps out of your IndyCar's fuel tank. You still need raw speed to outshine the field here, but that feat is best accomplished by lowering the wings and lengthening the gears. You can afford to concede the three tight left-handers, as well as the one tough right turn (number twelve) in order to obtain the necessary speed.

Aside from the addition of rain tires, wet weather will do little to alter your setup. The track will still be fast, and conquering the long straights will still be your primary goal.

Leaving the start/finish line, it's a long straight shot into turn number one. When you get there, you'll find the first curve is a long, mid-gear right-hander. Down-shifting to fourth, get back on the throttle as the turn forms an early apex. You should be back in sixth gear by the time you reach the next turn, and though it closely resembles turn one, it is a little sharper. Follow the same procedure here but shift all the way down to third this time, again exiting early for a long straight.

At the bottom of the straight you'll reach turn five, known as the Moraine Sweep. It is a nauseating ninety-degree left turn, bringing the car down to first gear. As you exit, you'll climb a short, steep hill while accelerating into the blind turn six. The road suddenly dives left at the crest of the hill, and you'll need to know it's there before you're able to master it. Again dropping to first, get through the corner and begin working your way back up through the gears as you round turn seven.

Just as you reach fifth gear, you'll again be forced into first gear by a tight left bend, number eight. Turns nine and ten circle around to the right to form the Carousel, a long, sweeping corner that is tough to hold. Pay careful attention to your acceleration rate through this series, so you don't wind up off the pavement.

After going through eleven all out, you'll take a long, full-speed ride through some slight twists and turns until you dive into turn twelve, a severe right. After entering first gear for it, make the turn and then get back on the power, keeping the rpms up as you race under the Billy Mitchell bridge at turn thirteen. The course makes a left kink here which can almost be taken flat out. Slow down to second to handle turn fourteen, a right that takes you back onto the main straight. Now it's the long, uphill climb past the pit entrance, paddock area and scoreboard across the start/finish stripe.

## **Mid-Ohio Sports Car Course**

### **This Roller Coaster In Ohio Is Never Dull.**

Heart-stopping elevation changes and precarious corners make the Mid-Ohio Sports Car Course one of the most thrilling legs of the IndyCar circuit. Turn two, known as the “Keyhole,” is a breath-taking sight when full of IndyCars.

## **Mid-Ohio Sports Car Course**

**Circuit Type: Road Course**

**Circuit Length: 2.25 Miles**

**100% Race Distance: 200.25 Miles (89 Laps)**

The Mid-Ohio Sports Car Course is located in Lexington, Ohio, halfway between Cleveland and Columbus. Although the track is over thirty years old, it didn't begin to emerge as major league IndyCar venue until the early eighties. The layout successfully brings together all of the demands of IndyCar racing- hills, hairpins, long straights, narrow pavement and fast corners. To win here, you'll need the full complement of these skills. Still, wheel-banging accidents are all too common during the early laps, due to the congestion found on the narrow track. The tight quarters also mean that overtaking must be handled with surgical precision.

Clear, sunny weather means that ace drivers will be armed with fast setups. Although some of the turns are cramped, the long straights are critical to fast lap times. You'll have to concede some of the slower corners like the "Keyhole" by dropping into low gear for them. Those handier with transmission strategies may want tight gearing between first through fourth (for acceleration in the turns), while fifth and sixth could be quite tall (for speed on the straights). Most of the significant turns at Mid-Ohio are to the right, so negative stagger may offer some drivers an extra measure of cornering control.

Rainy skies dictate little change to your setup, save for the rain tires and some extra wing. Earlier braking will be necessary to round some of the corners, but you'll still want to keep rpms up in order to be able to attack the straights.

Leaving the start/finish line, the pavement begins an ascent through turn one, a second gear left-hander that leads onto a straight. The pit exit merges with the racing surface just after this turn. You'll then have time to reach top gear on the long front straight, climbing uphill all the while. The brake markers on the left indicate the proximity of turn two, known as the "Keyhole." Probably the most widely recognized facet of this circuit, the "Keyhole" is a 180-degree hairpin that sits atop the crest of a hill. After down-shifting to first, keep the revs up and stay to the outside of the corner until you reach its apex, just before the turn's dead center.

Re-apply the power in smooth strokes here to avoid a spin on the exit. Now it's a downhill, flat-out run along the back straight, that includes a slight bend to the right (turn three). The straightaway cruelly ends at turn four, the beginning of the section of track known as the "esses." IndyCar drivers have scornfully changed the name to "madness." Whatever you decide to call it, you'll need to start by shifting down to first for turn four, a ninety-degree right. Time for only one gear change up before braking again into turn five, a severe left. Stay off the power here; the track is quite narrow.

As you exit turn five, there's just enough time to make two shifts up to third before braking into turn six. Take six in first-gear, rpms peaking; then, stay on the throttle through seven, a slight left. By the time you encounter turn eight, a jog to the right, your speed will be high enough to demand a brief lift off the throttle. You'll only be able to accelerate out of eight for a split second, before slowing and down-shifting into nine, a tight right-hander.

Turn ten can be taken flat out; it is a bend to the right that sets you up at the base of a hill. You'll drop down to third to get through number eleven, a sweeping left in the middle of a climb. Continue accelerating to the top of the hill, where you'll reach turn twelve, a long, second-gear right that includes the pit entrance. Out of twelve, you'll drive downward into thirteen, a left that can be taken nearly flat-out with a good setup. Check your time as you cross the line; if it's under seventy seconds, you're in the ballpark.

**Phoenix International  
Raceway**

**Desert Storm.**

They could be vacationing on the welcome shores of some beach. Or they could be reclining under the oaks in a soothing hammock...but they aren't. Instead, these drivers are here in the company of thousands of fans who watch as they scatter dust in the dry wind. Hearing the tumbleweeds beckon yet?

## **Phoenix International Raceway**

**Circuit Type: Short Oval**

**Circuit Length: 1 Mile**

**100% Race Distance: 200 Miles (200 Laps)**

Phoenix International Raceway is appropriately situated in the desert, within a southwestern mix of adobe and pastel hues. The oval is demanding, and the hot climate creates an inconsistent racing line as the sun tests the limits of an IndyCar tire's adhesion.

You will need at least two solid setups for a productive weekend at Phoenix. Your qualifying car will need to be fast and loose. Plan on building a car that uses little wing, lots of stagger, stiff shocks and three gallons of methanol to get the job done. As you prepare an IndyCar for the actual race, look for a setup that feels good in or out of the groove, and in or out (mostly in!) of traffic. 160 mph race laps ought to do it, but try to find this range with the turbocharger notched down to 7. Your fuel economy will be better for the whole 200, and you'll have some extra power in reserve if you need it.

Since the Arizona desert only sees 15-20 days of rain annually, chances are that race day won't be wet. And if it were, the race would be postponed, since IndyCars do not race on ovals in the rain. Temperature and wind are probably the chief concerns of any IndyCar team at this track. Keep a watchful eye on wing settings, tire compound choices and pressures, based upon the current weather.

From the air, Phoenix looks like an inverted copy of Nazareth, but many similarities end there. For this tour of the track surface, we'll need to start at the end of turn four, by the entrance to the pit area.

Down the front straight, traffic will frequently be three abreast, with drivers bunched together in packs. Drafting is a tempting idea here, but take care to see that you break the tow a few car lengths prior to engaging the first corner.

Turns one and two run together, and the first turn is by far the trickiest on the oval. The pavement rolls into its banking at the same moment the roadway starts to bend sharply to the left. The complexity of this turn is compounded by the fact that cars will be merging from the pits on the frugal chute to the left side. Once the car is oriented properly to handle turn one, begin to straighten the front wheels. Sustaining a sharp turn will take you too far inside as you exit, creating a wild and dangerous driving line. It takes some practice to avoid the desire to overcorrect.

Along the backstretch, the track bends oddly to the left. Too much sightseeing here will have you attacking the bend late, and you'll find it difficult to get the car back on line. Drive smoothly, anticipating this kink just before you arrive at it.

The banked third and fourth turns form a long, high-speed corner that dumps you back out onto the front straight. These are great drafting corners because they allow you to build up plenty of extra speed for the straightaway. With the pit entrance to the immediate left of turn four's exit, you may want brake bias toward the rear of the racecar in order to facilitate safer stops.



**Pacific Place,  
Vancouver**

**Best Behavior in B.C.**

Vancouver's brisk streets provide the location of one of IndyCar racing's most competitive events. Twisty, oft-narrow pavement squeezed into an arena-style background forces drivers to a higher level concentration. Racing strategy rather than all-out speed proves vital in these parts.

## **Pacific Place, Vancouver**

**Circuit Type: Temporary Street**

**Circuit Length: 1.677 Miles**

**100% Race Distance: 167.7 Miles (100 Laps)**

The Vancouver IndyCar race is held on a flat, scenic site near downtown. Its backdrop includes a spectacular mix of the city of Vancouver, False Creek and the Coast Range. Many of the structures in and around Pacific Place were erected for the 1986 World Expo. The track itself encompasses the British Columbia Place Stadium, where the B.C. Lions play Canadian football. Portions of the course were built strictly for the race, while the remaining segments are actual, operating roadways. The overall circuit has an “amusement park” feel to it, and is a terrific venue for race fans. Drivers tend to be at odds with the track however, as it is narrow and difficult to pass on.

Before setting your IndyCar up for Vancouver, drive the course with an easy car for a few laps. As you learn the circuit, decide how you would like to attack it from a racing perspective. Are you comfortable with the turns? Or are you better suited for the straights and sweeping bends? If you plan on out-cornering the competition, take a little extra downforce via the wings, and run the gear ratios tightly together to provide superior acceleration. If the straights and light bends feels better suited to your strengths, then your Long Beach setup will probably fit the bill. Taller gears, a little less wing, and stiff rollbars should do it.

Wet weather at Vancouver mandates additional wing, treaded rain tires, and tight gearing (with a tall gear to prevent loss of control upon acceleration).

As you leave the start/finish line, the roadway bends lightly to the right, then sweeps to the left. This combination requires no more than a slight lift in traffic, but can generally be taken flat out.

After crossing under the Cambie Bridge the pavement winds to the right. This slight curvature of the layout leads you into the turn three hairpin, and can serve as an excellent brake point. The hairpin kinks sharply right, and will bring the car to the bottom of its gearbox until safely around and back on-line.

The road zings to the left going beneath Nelson Street, and this stretch can be had at full power until you reach the chicane. Turning left into the chicane, you can still be downshifting, but then the right-hander is a very tight, slow corner. Once beyond this challenge, the circuit bends left and then wraps around the domed football stadium. This entire section can be run hard, just don't be too eager to get back on the power as you exit the chicane.

Just past the stadium now, the course makes a difficult left bend, forcing you into first or second gear. Out of this turn, you can expect to accelerate up only a gear or two before hitting the tough right. This corner features a very late apex that will require some adjusting to. Remember to keep the rpms up for the exit.

Now you've got something to work with. The track gradually follows a path to the left, then to the right. You will be trying to obtain top speed here, and looking for passing opportunities. The conclusion of this section will take you into another right-handed hairpin, with the pit entrance opening up as you leave the first gear turn. Avoiding the pits will allow you to lift off the power momentarily as you make the final corner, a left bend. At the apex you're back on the throttle again, blasting past the grandstands on the straight.

## **Technical Support Information**

### **SECTION 10: CONTACTING SIERRA FOR FURTHER ASSISTANCE**

Sierra On-Line has a full library of help documents available electronically. You can download them from the following sources:

- America On-Line: Use keyword SIERRA and choose "Software Libraries", then "Troubleshooting Guides & FAQ's"
- CompuServe: Use go SIERRA, choose "The Sierra On-Line Forum", then search the "Help Documents" library.
- Go to our home page on the World Wide Web at <http://www.sierra.com> and follow the on-screen information.

Additionally, you can get documents via our automated faxback service. Call (206) 644-4343, choose to use the automated technical support system and follow the voice instructions provided. You will be faxed a catalog of all of the documents that we have to offer and you will then be able to get the documents you need. If you prefer, you can also fax us at (206) 644-7697 with your document request.

If you prefer to get assistance from a technician, Sierra Technical Support will be happy to assist you. All of the online services listed above are staffed by Sierra technicians. Additionally, you can send e-mail to [support@sierra.com](mailto:support@sierra.com).

In case you wish to contact us via fax or U.S. mail. Our fax number is (206) 644-7697 and our mailing address is:

Sierra On-Line Technical Support  
PO Box 85006  
Bellevue, WA 98015-8506

For phone assistance, you can reach Sierra Technical Support at (206) 644-4343 between 8:00 am and 4:45 pm, Monday through Friday. Please try to be at your system or have a copy of a Microsoft Diagnostics (MSD) report from it when you call.

If you are in Europe, please contact our office in England. The Customer Service number is (44) 1734-303171, between 9:00 am and 5:00 pm, Monday through Friday. The BBS number is (44) 1734-304227 and the fax number is (44) 1734-303201. Customer Service can also be reached at the following address:

Sierra On-Line Limited  
4 Brewery Court  
The Old Brewery  
Theale, Reading, Berkshire  
RG7 5AJ UNITED KINGDOM

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