



BMW Motorcycle Club of Ottawa

BMW MOTORCYCLE CLUB OF OTTAWA

ON-TRACK RIDER TRAINING

(OTRT)

STUDENT MANUAL AND TRAINING INSTRUCTIONS

22 April 2007

Prepared For:

BMW Motorcycle Club of Ottawa Rider Training Program

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1 INTRODUCTION

1.1 Manual Overview

This manual has been drafted to provide information and techniques that are relevant to any type of riding, including on-track training activities. The various appendices provided in this document provide both general track-training information, and information specific to the training venue.

1.2 Composition

As you can see from the Table of Contents, there are three main sections to the manual: an introduction; acknowledgements and references; and, the On-Track Rider Training tutorials, a series of five lessons for self-study and/or formal training depending on the event or the venue.

The included appendices provide more detailed information about the venue, how to utilize the information presented in the tutorials, safety requirements, etc.

1.3 Why We Ride

Motorcycling (not biking) is, whether we classify it as such or not, a unique activity. For some it is a way of life and making a living, for some it is a means of daily transport, and for others, it is a recreational pursuit. It is this uniqueness that binds so many of us together into the global fraternity of motorcycling. As such, the knowledge, skills and experiences we acquire, and share, creates a bond that is envied by many. While motorcycling can be a solo, pair or group activity, one of the constants generally observed is our willingness to help one another and to help those entering our fraternity to become better motorcyclists. For any or all of these reasons – we ride.

1.4 Making the Ride Better

Learning can be one of the greatest and most satisfying events you will have. No matter your experience level as a rider, or your age, it is seldom that any of us undertake a ride of some sort, without learning something along the way. As we undertake new adventures, meet new people and evolve as riders, there is one thing that we never stop doing, learning.

So, using the axiom that everyone learns something on every ride, the riding you will undertake as part of this track training day will be part of the ongoing learning process. No matter the venue, the more we ride, the more we diversify our types of riding, the more we build up our

knowledge, experience, situational awareness and hopefully, wisdom All this typically translates into a better rider and, a better ride.

To this end, the BMW Motorcycle Club of Ottawa (BMWMC Ottawa), as part of its Rider Training Program (RTP) has created this On-Track Rider Manual publication. As the first version, it is a work in progress and it will be updated for subsequent on-track training activities.

1.5 Introduction to the Program

The On-Track Rider Training or OTRT has been developed by the BMW Motorcycle Club of Ottawa or BMWMC Ottawa to provide a venue for developing, presenting and maintaining what is hoped will be a series of discrete or related rider training courses.

This first edition of the Student Manual and Training Instructions is the first formal documentation developed for the OTRT. As such, this manual is being held as a draft document and subsequent editions, or versions, will reflect changes made to the training outline, or relevant to a specific venue.

As the Pilot Course under the OTRT, your participation in, questions, feedback and assessment of the course will be invaluable to further evolving this course, and providing a database of information for other types of training and activities.

If sufficient interest is shown in this course, and in other on or off-track training, other courses may be developed and presented for other than on-track activities.

1.6 Objective

The objective of the On-Track Rider Training is to maximize this skill development opportunity. The program will include: tutorial packages and/or classroom sessions designed to familiarize the rider with track protocols and to provide essential track insights; skill development practices including positioning, braking, accelerating and serving drills; supervised track sessions throughout the day; and, FUN!

Each of us will want to come away with something different from this training day. In general however, the overall goal is to make each and every one of us a bit better rider. This training will enhance your motorcycle handling, braking and cornering skills and allow you to work on enhancing situation awareness as we progress through the day.

1.7 Course Conduct

For this initial On-Track Rider Training activity, and due to time and resource constraints, this manual, along with essential training instructions will be provided to all participants prior to the actual training day. This will allow everyone who will be at the track to familiarize themselves with the core information so essential to a successful training day.

The actual training sessions will start as early as possible at the venue – see the information contained in the appendices. A review of the tutorial material, possibly in a classroom setting will help put all the background and track information together, and into perspective. An on-track briefing will be conducted just immediately prior to the start of the actual track activities, which will be a mix of warm-up drills, paddock exercises and track sessions throughout the day.

A formal training day schedule is being developed and it will be made available, either as part of this overall information package, or via separate distribution. There may be some changes to the overall schedule as we will be coordinating our activities for this initial event with the BMW Car Club of Ottawa. All information will also be available at the training venue.

1.8 Skill and Attitude Building

Motorcycling is one of the most demanding forms of activity – every sense and virtually every part of your body is, or should be, involved in the ongoing process of riding. This is a factor that makes riding a motorcycle such a unique, challenging and satisfying experience.

To meet the demands of riding, two critical essentials must be present – skill and attitude. Skill comes in many different forms and at many levels – it is the enabler of riding and is primarily considered as the physical part of riding. Attitude on the other hand is more a mental state than physical, although both influence the other. With attitude there should only be two conditions: Positive attitude = ride; and, Negative attitude = do not ride.

This might seem a little harsh, or perhaps too black and white. However, it is an accepted fact, backed up by statistics and testimony, that attitude, which includes cognizance and mental ability, is the number one cause of accidents and incidents.

Safe riding demands skill and a positive attitude. It also demands an open mind. So, with the brain set to sponge mode, this track training will allow you to focus on acquiring or building skills and at the same time, work on the mental processes, to bring you closer to the ‘comfort’ zone. With physical and mental processes in tune, your confidence will increase, bringing you closer to the comfort zone. This convergence of skill, knowledge and confidence will make you a safer rider and enhance your riding experience.

1.9 Safety is Everything

1.9.1 General

Safety at any event is the primary concern. You will find that this Track Training Session is governed by this premise. The objectives are to refresh skills, acquire new knowledge and abilities and have fun in an interactive controlled environment. Speed is not an objective.

1.9.2 Governing Instructions

The CMP, Club and Track Safety Procedures will all be covered during this training activity, and the essential procedures will be covered again during the Track Briefing Session, and reinforced throughout the day.

1.9.3 Control and Discipline

Safety Infractions and Incidents caused by infractions will be dealt with quickly and firmly, and you will be either pulled over by a Marshal or brought into the pit area by the Controller and the matter dealt with.

1.9.4 Individual Safety

Personal safety, especially regarding the wearing and use of personal protection equipment, all of which must meet a certain standard or condition, has been clearly identified in all joining material and will again be covered during this training. See Appendix E for the full individual safety requirements.

1.9.5 Motorcycle Safety

Safety includes having a safe motorcycle, one that is prepared for any specific event, including this Track Training Day. General and specific motorcycle requirements were clearly identified in all joining material and will be covered during this training. See Appendix E for the full motorcycle safety requirements.

1.9.6 Communications

Although some of the staff will have communications devices (radio or telephone), most of the communications will be conducted indirectly by flags, or directly, in a group forum, or one on

one. As this is a track training event, close control over staff, students and other individuals will be exercised. This means that clear communications, and adherence to all instructions is critical, at all times.

1.9.7 Personal Liability Insurance

Personal Liability Insurance - there have been many instances over the years where individuals have been unable to collect any sort of damage or liability claims as a result of using their personal motorcycle for any type of track event, training and/or supervised or not, despite no specific provisions contained within the individual policies. It is very easy for any insurance company to deny coverage, basically claiming that racetrack damage is not covered, even where it is specifically identified as a 'education event'.

The best approach is to verify your coverage **before** going to the track. Ask your agent or service representative to confirm, in writing if necessary, the coverage. Some individuals even get their lawyer to review the policy – do whatever it takes to be sure. If the coverage is not there, then consider buying additional coverage, or a specific policy designed for this type of activity.

Forewarned is forearmed.

1.9.8 Club and/or Track Insurance

Track/Facility Insurance - all participants for this event may or will have to sign a facility waiver, which is standard for track organizations. Subject to confirmation, this issue may be addressed by the BMW Club of Canada insurance waiver, per the following section.

Club Insurance – The BMW Club of Canada, of which the BMW Motorcycle Club of Ottawa is a member Club, has a Commercial General Liability/Participant Accident policy with Jones Brown Inc. This coverage will be in place for the track day event. Every participant at the event will have to read, understand, accept and sign the Waiver before being allowed past the Registration Area.

As needed, further information will be provided by separate correspondence and on the Club website.

If you have any questions or concerns over personal, track or club insurance, please ask.

2 ACKNOWLEDGEMENTS AND REFERENCES

2.1 Acknowledgements

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- Calabogie Motorsports Park (CMP) Organization
- Andrew Currie
- David Makin
- Pat Boyd
- Rich Peillard
- Jason Thoms
- BMW Car Club of Canada
- BMW Car Club of Ottawa
- BMW Driving School, Bluenose Chapter

2.2 References

The BMW Motorcycle Club of Ottawa (BMWCC Ottawa) wishes to acknowledge the following publications and/or material used in the drafting of this manual. Some sections also contain reference or link information as applicable.

- The Advanced Driving School, Student Manual, Bluenose Chapter – BMW Club of Canada
- BMW MOA Foundation MotoSafe, www.bmwmoafoundation.org
- Canada Safety Council Motorcycle Training Program – Ottawa Safety Council
- Canadian Race Communications Association (CRCA) – Track Marshal Training Manual, CASC Ontario Region, Revised April 2003
- CRCA New Marshal's School Presentation, 2007, www.crcal.com
- Keith Code's No BS Bike, Article from BMW Owners News, March 2002
- MCNews, March 2007

2.3 Glossary of Abbreviations and Terms

Abbreviation/Term	Description	Note
BMWMC Ottawa	BMW Motorcycle Club of Canada – Ottawa	Sponsor
Controller		
CMP	Calabogie Motorsports Park	Host Facility
CRCA	Canadian Race Communications Association	Marshals
Marshalling	The purpose of marshalling is to provide a safe course.	Marshals
OTRT	On-Track Rider Training, BMW Motorcycle Club of Ottawa program	
Paddock/Pit Area	Restricted areas used for facilitating teams (riders and crew), support staff, training and pre-staging prior to entry on to the track	
PPE or PPR	Personal Protection Equipment or Requirements	
SA	Situation or Situational Awareness	

3 ON-TRACK RIDER TRAINING TUTORIALS

3.1 Overview

In this first edition of the Student Manual and Training Instructions there are five discrete, but related tutorials, as provided below. The information provided in the following sections is meant to be absorbed by the student either as a self-paced activity or in a formal classroom environment, with appropriate supporting media.

No matter how the material is presented, it is important that it be read and processed prior to the actual training activity, as everything presented in these tutorials is important and will be utilized throughout the training day.

3.2 Tutorial One – Safety

3.2.1 General

“Safety”, as they say, is everyone’s responsibility. We all, to one degree or another, live with this issue every day, hour and second of our lives. For some it is a way of life, for others, it is something to be addressed under certain circumstances, and for others, it only becomes important when their life or of those around them, become endangered.

The above might seem like a harsh assessment, but experience has shown that it is pretty much the norm. So, how much of a factor is “Safety” in your life. During the track training activity, it will be paramount.

3.2.2 Situational Awareness

As generally defined, Situation Awareness or Situation Awareness (SA) is a human factors term that, even though often viewed as a buzz phrase, is extremely important to all drivers and motorcyclists alike. For our purposes, we will state that it is simply being ‘aware of your situation’.

An established definition states that situation awareness comprises three levels:

- Level 1 – perception of the elements VS reality
- Level 2 – interpretation or comprehending what those elements mean; and
- Level 3 – using that understanding to project future states – expectation and bias

Factors that reduce situational awareness are:

- insufficient communication
- fatigue/stress, task overload
- task underload
- group mindset
- “press on regardless” philosophy; and
- degraded riding conditions.

Factors that provide or improve situational awareness are:

- knowing where to look and what you are looking at (good scanning strategy)
- clear mental concentration
- resistance to distraction
- educated judgement (experience); and
- familiarity with the equipment and environment.

So, as you can see, situation awareness is pretty much what ALL of us need to have, ALL of the time, to survive ALL trips. Track events are no different, although you may feel that situation awareness is a fleeting thing at times.

A long-term CSC and MSC phrase “Be Aware, Ride Aware” was defined long before situation or situational awareness was clearly defined or a widely recognized term. But, these two basic tenets still apply today and it is important to remember that you, as the rider, must have control of yourself and the motorcycle you are riding.

Fundamentally, situation awareness is an informational concept. If the mind and body have the necessary information to plan, process and execute control actions, life is good. But, when there is inadequate information, information overload or, when information cannot be processed in a timely manner, we lose control or make decisions that (ultimately) lead to a loss of control.

We all, to varying degrees and in different ways, ride aware, but we do not always see or process all the necessary information needed to maintain control or react to a given situation. This is where self practice, training courses, track training days and mentoring come into their own,

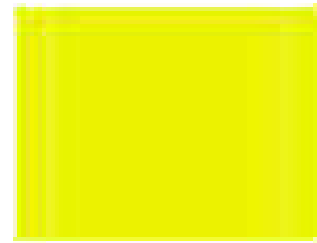
allowing you to learn, increase your sensory intake, gain greater situation awareness and have fun, while staying safe!

3.2.3 Flags

Flags are used on track facilities to communicate to all participants on the track, not just the riders. Flags are typically displayed by coaches, track marshals or corner workers, and may be displayed steady/motionless or waved. Typically a waved flag emphasizes the flag's basic meaning.

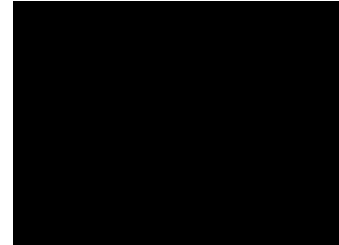
While a detailed coloured description of all flags used for track purposes is provided at Appendix C, we will only be using a basic set of flags for the OTRT activity. These basic flags and their meanings are provided here:

- Yellow Flag – any yellow flag is a signal of DANGER in some form, at or beyond the station displaying the flag. Alternatively where no flag is displayed, a worker may display one or both arms held at right angles to the body, either steady, or waved vigorously up and down.
- Yellow Flag with Red Strips (Debris Flag – if used, the yellow and red striped flag informs riders to take care. It is used to warn of a slippery or dangerous surface as could be caused by oil, water, debris, etc. The flag is typically displayed until the surface returns to normal. Alternatively, where no flag is displayed, a worker may stand with hands held in a large circle to the side, fingers interlocked. This action may be followed by a gesture, pointing away from the debris (clear path).
- Red Flag – this flag is always waved and used to indicate that a race or session has been SHUT DOWN and that activity must cease immediately. The typical action to be taken during training events is for all riders to pull to one side of the track and await further instructions from Track Control or escort back to the paddock area. Any required updates will be provided during the Track Briefing. Alternatively, where no flag is displayed, a worker may

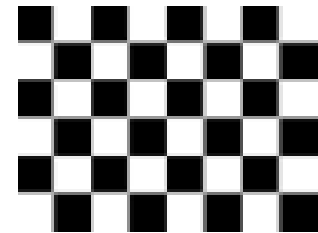


stand with one hand on top of their head, with the other drawn across the throat and remaining at the throat – this is a universal symbol and must be respected.

- Black Flag – this flag is displayed at the start/finish or entry/exit or other location specified in the Track Briefing. For training purposes, this flag will indicate that the rider identified is required to talk with a specific person, typically a designated Coach, who will be identified during the Track Briefing. This requirement will likely require the rider identified to exit the track and return to the designated area.



- Checkered Flag – this flag, for training training purposes, will be used to indicate the end of a particular activity on the track. When this flag is displayed at the start/finish point, all riders will exit the track via the identified points or follow the designated Leader/Coach off the track.



3.2.4 Facility/Track Protocols

In general, each facility has its own set of rules and regulations regarding track protocols, that involved paddock, pit, administrative and track areas. Some general information is provided below for information purposes, and information specific to the track training venue is provided in the accompanying appendices. These ground rules will be fully covered in the On-Track Briefing as well.

Paddock and Pit Areas – these areas are typically very busy and control over all movement in, out and through these areas must be provided at all times. As well, the paddock areas are likely to be used for individual exercises, in which case access to these areas may be restricted from time to time. Information specific to the training venue will be provided during the On-Track Briefing.

Entering/Exiting the Designated Areas – access to and from designated areas, including the pit and paddock area is controlled at all times. Entering and exiting the main pit area safely takes good situational awareness and communication between the riders and the controlling staff. Information specific to the venue will be provided during the On-Track Briefing.

Flagging Procedures – For the OTRT activity, the number of flags will be minimal, as identified above in section 3.2.3. Flagging itself will only be used when necessary to provide absolute control on the track and rider safety at all times. It is essential that all participants know the meaning of the flags used and obey the instructions that will be provided during the On-Track Briefing.

Passing Rules – Go – No-Go Zones – for training purposes, strict lane control will be enforced throughout most of the day’s activities. Some track sessions, particularly those involving the whole track, will likely provide the opportunity for riders in certain groups to pass or overtake, but only within the zones identified in the On-Track Briefing and as demonstrated by the Coaches. Any violation of the stated rules may result in loss of session or track day privileges.

Slowing and Pull-Offs – slowing on the track, unless specifically directed to do so by the leading Coach, for other than approaches to corners, should not be undertaken. As well, pulling off of the track should only be done in event of a Red Flag condition, as directed by a Coach, or in the event of an emergency involving the motorcycle or rider. Complete instructions will be provided during the On-Track Briefing.

Other Situations – in the event that there are multiple courses being used at a specific track, extra care must be taken by all participants so that there is no interaction or incidents between the various courses or layouts. Situations unique to the training venue will be clearly identified during any Track Brief, with required actions clearly identified.

3.2.5 Individual Safety

Personal Protection Equipment (PPE) is something that every motorcyclist should be concerned about, and not just for track training days. So as to maintain a high standard so essential to meet personal and property safety requirements, Appendix E provides a detailed listing of what is required for PPE.

On site technical inspections will include a check of all clothing to be worn by the participants so as to maintain a high standard. As noted in the Appendix, if you are not sure of any article to be worn, either ask before the event, or bring extra items, just in case. We will make every attempt to have some spare items, but this is not guaranteed.

3.2.6 Motorcycle Safety

Technical requirements for motorcycles to be used for this training activity are also detailed within Appendix E. Again, if there are any questions, please ask well before the event, attend one of the pre-event preparation sessions that are being planned or discuss the requirements with your local motorcycle dealer, including those who are providing the inspection services.

3.3 Tutorial Two – Motorcycle Control Theory

3.3.1 The Forces Within and the Forces Without

As motorcyclists we all experience the laws of physics – gravity, inertia (acceleration), kinetic energy and centrifugal force are very real. In any riding situation, these ‘laws’ can be both a friend and a foe.

Most motorcyclists, either through intuition, formal and informal instruction and, experience, have learned to take this combination of natural laws and use them to good advantage, typically without conscious thought. While experience, and practice may result in the rider using the laws to best effect as more of a reflex action or unconscious thought, this is not the case for everyone.

Gravity, aided by track and tire friction, and skilled application of the other laws, usually keeps us firmly planted, straight up or leaned over. But, as most of us know, gravity can be overcome, typically by abusing this, or one of the other laws.

Inertia, gained through acceleration or forward motion is usually good, as long as both the rider and the motorcycle move forward at the same speed, but when this principle is broken, for whatever reason, the law is bent, as may the rider, the motorcycle, or both. One of the simplest examples of this principle is if the motorcycle were to abruptly stop or slow quickly, then the rider in motion typically continues in motion, usually moving over or away from the motorcycle.

Kinetic energy is the energy of motion. Any object which has mass and motion (inertia) has kinetic energy and for any increase in speed differential between two objects, kinetic energy increases significantly. It is this built-up energy that must be effectively handled (absorbed, distributed or dissipated) by personal protection equipment. When this force is not dealt with, in one way or another, severe injury, internal or otherwise, is often the result.

As our motorcycle wheels turn, they behave as if they are experiencing an outward force. This is commonly known as centrifugal force (even though it does not actually exist). It depends on mass, speed and distance from the centre (hub) – if any or all of these are increased, the force is increased. A simple example is a merry-go-round, stay in the middle as it rotates and you feel less force working on you, but move towards the rim, and you may be thrown off, so great is the force. We feel it because our wheels feel it and because we (typically) understand how it works from the gyroscopic demonstrations and counter-steering exercises (low and high speed), we typically put it to work in a useful manner. What must be understood here is that the difference between fast and slow speed turning is the amount of centrifugal force that exists and that at low speeds, the centre of gravity may prevail, vice centrifugal force.

One of the best examples of how all these laws come into play is when cornering a motorcycle. The downward pull of gravity, friction between the tires and the track, and centrifugal force,

which acts to the outside of the turn, along with inertia, must all be balanced, so that the force of gravity reaches equilibrium with the centrifugal force. This balancing act takes practice and is not achieved overnight.

3.3.2 Traction

Traction can be a tenuous thing and is dependant on many factors, some of which are covered here:

- Tire Type and Condition – this is one of the most important factors. Tires must be in good condition (not worn down) and provide a minimum footprint for adhesion purposes. While dual purpose or ‘knobby’ tires can be used on the track, one must remember that the tire footprint may be reduced and that adhesion may not be to the same standard as a track or street tire. The ‘stick’ factor of a tire is also very important. Typically, the softer the tire, the better the friction coefficient between the tire and the pavement, resulting in less slip (see below).
- Surface condition – even though most tracks are laid down with a composite surfacing material to provide optimum traction, a wide variance in surface conditions can be observed on the same track, mainly due to weather affects, time and track usage. This can include foreign matter of many kinds and even though most tracks are kept clean and repaired, debris or obstacles (fixed or moving) can be encountered.
- Temperature - of the air, the track and of the tire. Depending on the time of year and the location, track surfaces can be very sticky or very slippery, even when it appears to be dry. This is often due to fluctuations in ambient temperature and humidity. Tire temperature is very important when on the track and while generally speeds are not high during training sessions, all tires need either heat maintenance (tire warmers) or use to bring themselves up to an optimum operating temperature, resulting in optimum friction between the track and tire surfaces.
- Speed – any tire, even when running at an ideal temperature and on a warm track, can be over-ridden or pushed beyond its adhesion (friction) or structural limits, typically through excess speed – straight line or otherwise. This is another reason why good high-speed rated tires must be used on the track – even good on/off road tires have speed ratings – do you know what the ratings on your tires are?

3.3.3 Balance Basics

Motorcycles are single track vehicles and as such, they lack inherent (static) balance – without support, they will fall over and sometimes, even with support, they still fall over!

As we start off and our speed moves from low to high, an astonishing transformation takes place and our two wheeled conveyance that once could not support itself without mechanical or physical assistance, magically appears to take flight. However this flight is not typically maintained for long without some form of input from the rider.

At low speeds, we can maintain balance by both moving the tires around to stay in line with and under the centre of gravity, and by moving the combined centre of gravity of both the rider and the motorcycle. These are two skills that once mastered, pay off every time we ride. For those who ride off road, including trials, moving the centre of gravity around, ie – moving the body off of the machine, to one side, or over the front, provides optimum control.

Balancing at higher speeds, while seemingly more simple is, in reality more complicated and involves more of the laws of physics discussed above. For most of us however, it is largely automatic and somewhat independent of rider ability, at least while moving in a straight line at a constant speed.

It is sufficient to say that the centre of gravity is extremely important in balancing and maintaining control of your motorcycle, at low and high speeds. The weight differential between motorcycle and rider or rider with passenger is an important factor. Any sudden shifts or movements, not practised, can cause the overall centre of gravity to shift and a loss of control to result.

The key is to maintain as neutral a position as possible – rider and passenger in line with the motorcycle, its wheels and the centre of gravity. Any deviation from this will likely cause the single track flight effect to be interrupted.

3.3.4 Steering Inputs

Steering inputs or methods typically involve counter-steering or body steering.

Counter-steering is most effective at higher speeds, where centrifugal force is greater than any shift in the centre of gravity of the unit (rider and machine). As we have all learned, the idea is for the rider to turn the handlebars in the opposite direction of how the bike needs to turn – push left to go left. In this action, pushing the bar to the left turns the bars to the right, forcing the top of the wheel to move to the right, resulting in the motorcycle moving or leaning in the opposite direction that the wheel was turned.

Body steering is based on the concept of shifting rider weight and pressure applications between various parts of the motorcycle, which influences it to turn. Anyone who has ever ridden, and guided a bicycle, has used this type of steering. So if we apply this to a motorcycle, by shifting body weight or applying pressure on the left side of the motorcycle, the motorcycle will initially compensate by leaning and steering to the right, but it will then counter-steer into a left turn.

While many street riders typically use counter-steering, off-road riders will typically use body steering, or a combination of both. On the track, one or the other can be used, but with experience, both can be used, often depending on the situation.

3.3.5 Braking

Most modern motorcycles equipped with hydraulic brake systems, multiple discs, braided lines and multiple piston calipers have more than enough braking power to rapidly decelerate the vehicle. Despite these advantages, braking properly remains an important skill that takes practice (and more practice) to master.

Straight Line - an average motorcycle relies on the front brake for around 80 percent of its stopping power. Brakes should be applied in a graduated fashion (although timing may dictate how fast the graduation is), with vigilance for the surface properties of the road/track and speed of deceleration needed. With aggressive braking, when the tire breaks hold with the road surface, a skid will result. Because the weight of the motorcycle transfers to the front under braking, the rear tire will tend to skid more easily than the front. True front tire skids are often more serious, however, as the front may “tuck” under and a fall result.

Curves/Corners - apply the braking before entering the corner, when the bike is still upright. There is more traction available at that time, due mainly to the larger tire contact patch and less forces on the front tire, before initiating the turn. Again, a graduated application of brakes, and gradual let-off will help keep the bike stable. “Trail braking”, or using the brake while still in the corner, up to the apex, is an advanced technique that is sometimes useful for scrubbing off speed or weighting the front end to tighten a turn.

Emergency – even for emergency braking situations, the basic rules apply – the front brake is the dominant brake to use, with the back brake providing drag or trail and allows for a measure transfer in weighting. If the motorcycle has integrated braking (front and back), the applicable control brake should be applied as hard as possible, which allows the system to work effectively. An integrated system with ABS will work in a similar manner, although the ABS will typically keep the wheel or wheels from a lock-up condition. Remember, ABS is not (very) effective on loose surfaces and should be turned off if possible, especially if emergency braking might be needed. Know your motorcycle, practice emergency braking procedures on a variety of surfaces, preferably with supervision.

3.3.6 Avoidance Manoeuvres

As discussed in other sections, there are two basic ways of changing, or modifying the path of you and your motorcycle, outside of emergency braking.

As needed to avoid a stopped or slow-moving obstacle, even another rider, a counter-steering action, left or right, while maintaining a balanced position on the motorcycle is typically very effective and often the first option considered by the rider. Do not use your brakes.

However, in instances where time, space and conditions do not support a counters-steering action, the next best action is to shift body mass out or up and away from the motorcycle, allowing it to act somewhat independently. This action is most often taken when riding up to and hopefully over, an obstacle. Do not use your brakes.

As on the street, these manoeuvres may be needed on the track as well and just because the track is a controlled environment, it does not mean that obstacles do not exist, mobile or otherwise.

3.3.7 Skidding and Skid Control

A skid can be caused by many things – loss of control due to a broken component, loss of tire pressure or complete blowout, road conditions, traffic situation, etc. One of the most common causes of a skid is related to braking, regular or emergency in nature.

A rear wheel skid is probably the most common skid experienced - if only the rear brake is applied, then depending on tire, weighting and road conditions, a skid is likely due to the excess forces generated. Typically, when too much rear brake is applied and a rear wheel skid results, the motorcycle can be maintained in a relatively straight line, but only if no steering input is made, and if the roadway is relatively smooth. If a skid is caused while the motorcycle is leaned over, then it is likely that the back end will be lost, usually in the opposite direction of the lean.

A front or rear wheel skid can usually be minimized by applying the opposite brake carefully which will change the overall weighting or loading from the affected wheel to both wheels. However, once this action is initiated, it is very hard to undertake any steering input, which is not usually a bad thing.

Avoid sudden moves – these by themselves can cause the motorcycle to skid, especially on slippery surfaces or when leaned over.

3.4 Tutorial Three – Balance

3.4.1 Balance - Advanced

As discussed in Balance Basics, there are significant differences in the amount of effort required to maintain low and high speed balance of a motorcycle and for most riders, the transition between low and high speed riding is (typically) gradual. However, on a track, even under relatively calm and controlled conditions, transitions from low to high and back to low speeds can be quite sudden and frequent. In this environment, the actions of both the rider and the motorcycle must be synergistic in nature.

Balance is typically achieved, and maintained in a track environment by four actions – neutral positioning, counter-steering, body steering and control. However, there are other factors that impact on the ability to maintain balance. Some of these are explored in the following sections.

3.4.2 Braking Effort

Braking effort must be commensurate with the situation and so as to allow balance to be maintained between the rider and machine. As noted above, braking, especially maximum braking, is best done either when in a straight line or as upright as possible. Braking at any time causes forward momentum to be lost, with a resulting increase in other forces, including weighting, all of which will affect balance between the rider and the motorcycle.

3.4.3 Acceleration

Acceleration typically brings on a sense of exhilaration, but control is needed at all times so as to keep that sense of exhilaration from turning into one of impending disaster. With rapid acceleration, comes a change in the weighting characteristics of the motorcycle, and if the rider is not prepared, rider weighting can change rapidly as well, all of which changes the centre of gravity. Most of us have probably experienced the feel of the front end getting light, or actually lifting off, intentional or not – this is a prime example of the laws of physics being displayed, as inertia (forward momentum) and other forces combine to defeat gravity.

Rapid acceleration is best achieved when in a straight line and having the motorcycle in a relatively upright position. From this position, maximum contact is made between the front and rear tires with the surface, and with a stable centre of gravity, both inertia and centrifugal force which build rapidly can be managed without losing control.

Accelerating hard when leaned over or with less than optimum tire contact is not recommended, at least not without a lot of experience, and faith in the motorcycle, and the track. Accelerating

smoothly, under all conditions, is a skill that must be learned and, like many others, become an integral part of the overall track experience.

3.4.4 Counter-Steering

As discussed in Tutorial Two, counter-steering techniques, while not always understood, are an effective means to quickly change your direction of travel, typically to avoid hitting an obstacle, large or small, stationary or moving or, to cope with a rapidly changing course at higher speeds, such as is done on a track, or very tight, twisty road. However, counter-steering, like all techniques, involves the laws of physics and while helping in some respects, they can also work against the rider and the motorcycle. In this instance, knowing what the forces will try to do, will help you, the rider, turn them all to your advantage.

Counter-steering, when performed at higher speeds, can be done without violently interrupting the overall stability of the motorcycle, largely due to the fact that centrifugal force is greater than any shift in the centre of gravity of the rider and the machine. However, if done at lower speeds and if the rider is not well positioned or well-balanced, a loss of control can result – likely due to the fact that centrifugal force was defeated by a rapid change in the centre of gravity.

When using, or practicing counter-steering, it is always important to be in full control of the motorcycle. Maintaining a centre line on the motorcycle, keeping legs (and arms) tucked in and keeping weight transfers to the minimum all help. Counter-steering can and is used quite extensively on the track and it can be applied while moving through corners at higher speeds. But, as this typically involves rider weight transfer and positional changes, it is essential that one understands just how to cope with the forces created, and generated. For this event, although counter-steering will be exercised and used on the track, there will be no requirement to work on the high speed aspect of this skill.

3.4.5 Lock-Up

Most lock-up situations are generated by too much braking force on the rear tire, although front brake or wheel lock-up, or both, is not uncommon, especially with high performance motorcycles that feature state of the art braking systems. While many riders now enjoy integrated braking systems and/or ABS, both of which reduce or virtually eliminate a lock-up, complacency should not become the norm.

Sufficed to say that if a lock-up occurs, the motorcycle should be kept in a straight line, and the rider should endeavour to stay as one with the motorcycle, as any abrupt shift in position or weight, unless done as a counter-measure, can result in loss of control over the motorcycle. As able, brake pressure should be released slowly and just to the point before lock-up. This action allows the wheel to gain inertia again slowly and reduces the overall weighting transfer effect.

If possible, the opposite brake should be applied slowly to act as a counter-force and assisting in the weighting change overall. If the opposite brake is applied suddenly, the rapid change in weighting will likely result in complete loss of control as all traction is lost.

3.4.6 Friction Zone

It is said that braking and shifting are two of the most important skills a rider can learn – the skills are fundamental in nature and essential to controlling the speed of the motorcycle, and maintaining control of the motorcycle, including balance.

For the purposes of this manual, the ‘friction zone’ is defined as the travel of the clutch lever between engaged and disengaged (released), the action (typically) necessary for shifting.

While many of us have been using a clutch on a motor vehicle since we undertook our first elicit joy ride, for others, the clutch on a motorcycle is the only one they know. Virtually all instructors or teachers, refer to the engagement area of a clutch as the friction zone, as that is just what is happening down below. As the clutch system comes together, the forward momentum of the spinning engine is engaged via the transmission and off we go. Most of us take use of the clutch, and the friction zone for granted, but we should not.

Being able to engage the clutch smoothly, ie – sensing the friction zone and working with it, is a critical element in maintaining your balance and thus control, of the motorcycle. If the clutch is released quickly, with throttle, and the rider is not prepared for it, the motorcycle gains forward momentum quickly, and the rider may, or may not do the same. By the same token, when downshifting, the clutch disengagement, and then engagement points must be known. The actions and timings must become intuitive, especially when riding on a surface that demands constant or rapid gear changes, up and down, such as many tracks.

Upshifting - while normal practice is to utilize the clutch for all shifting, with appropriate throttle settings, ie – roll off, shift, roll-on, there is another way utilized by many, especially on the track. This is the clutch-less shift and while we will not be focusing on this method, it can be done safely, with practice. Momentarily reducing the load on the transmission will allow the gear teeth and dogs to mesh into different patterns, allowing an upshift. The clutch does this, but so can a quick loss of engine power (by rolling off the throttle, or interrupting the ignition as in an aftermarket “quick shifter or power shifter”). The trick here is to pre-load the shift pedal with a slight upward pressure and without pulling in the clutch lever, roll the throttle off slightly, complete the shift, and roll the throttle back on again – the throttle is not closed at any point in time. In reality, the shift is a quick ‘twitch’ not a full and deliberate action.

Downshifting - smooth shifting while on or off the throttle is a skill that requires much practise and patience and it's a critical skill for setting the motorcycle up for a corner, track or otherwise. A poor downshift routine keeps the motorcycle unsettled and disrupts the harmony needed for taking a corner quickly and cleanly.

A smooth downshift requires that the engine rpm has time to match the transmission ratio. Most large bore engines have more than enough "resistance" (i.e. compression) to lock up the rear wheel if too low a gear is selected. Riders can alleviate this by blipping the throttle as the clutch is re-engaged, or using a slow release of the clutch lever to use the progressive re-engagement of the clutch. The result of smooth or progressive shifts is that, in combination with braking, it is possible to utilize maximum braking at one, or both brakes, and by leveraging the torque reaction of the motor via the transmission, maintain full control of the motorcycle while slowing down quickly. By the same token, 'dumping' the clutch (unless it is a slipper-style unit) when shifting up, or down, will result in severe forces being generated and unless the rider is fully prepared, probably result in a lost of control.

There are many techniques for best utilizing the 'friction zone' when upshifting and downshifting and some of them will be shown to you by the Coaches. All techniques have pros and cons depending on the type of riding you do, and the surfaces you ride on.

3.5 Tutorial Four – Cornering

3.5.1 The Basics

Maintaining the proper balance, and thus control of the motorcycle, while riding in a straight line is usually quite simple. However, when those corners, twists and turns come up, slow or high speed, other factors and influences come into play.

Typically steering into and through a corner is done in two phases: initiating the turn; and, maintaining the turn, thence to the exit and beyond.

While somewhat possible, especially at low speed, to steer a motorcycle through a corner, in a substantially, it is not entirely desirable, or feasible at higher speeds. If we try to keep the motorcycle straight up, centrifugal forces would cause the motorcycle to fall outward and probably off the road or track. Keeping the motorcycle ‘banked’ or leaned inward, counteracts this tendency (inward with mass/gravity VS outward centrifugal force).

Equilibrium, and a big smile, is achieved when the angle of the lean balances the two opposing forces: centrifugal force acting outward; and, gravitation force acting downward. So, to achieve this equilibrium, and a big smile, what needs to be done?

3.5.2 How to Corner – The Six Elements

1. Maximum Braking/Downshifting – maximum braking and braking balance must be carried out before the turn-in point – this applies to downshifting as well.
2. Maximum Braking Complete – ease off the brakes, as you transition through the turn-in point, you turn into the corner, carving an arc around to the apex.
3. Transition Zone – the balance point between braking/downshifting to gentle throttle application.
4. Apex – typically about two-thirds of the way through a corner, this may be marked in some exercises. Begin applying more throttle, gently.
5. Unwind – Allow the motorcycle to push through, or unwind, out of the corner.
6. Exit and Accelerate – Make a smooth arc or transition onto the straight, or next approach.

Initially, the focus is on having you utilize your peripheral vision to use the turn-in, apex and exit points (chalk or pylons) as a guide. In general however, similar to riding on the street or

road, you need to start using ‘objects’ along the track as well – chalk marks and pylons tend to start disappearing later into the track sessions, sometimes on purpose.

There are no ‘pylons’ per se along your normal riding routes, and it is important to always remember that without centre or side lines on the track, the side areas, smooth or rough, represent the on-coming or hazard areas which you really do not want to get into.

3.5.3 Rider Position

Race teams spend many hours matching their motorcycles to their riders, and there is no coincidence that racers all seem to adopt the head-down, curled-around-the-gas-tank, legs-tucked-in racer crouch. Even though you may not be riding a race replica, you can use some of the positioning cues that work on the track for the racers.

Novice riders tend to only consider their input in the control of their bikes as at the throttle, brakes, and handlebar. Although these are all important, how you sit on the motorcycle (fore and aft, side to side) and how you put weight on the pegs can also positively and negatively affect the handling of your bike. This is even more important as the mass (weight) of motorcycles (typically) decrease with each model year.

Experienced track riders often speak of feeling the front end “grab” in the corners and of pushing their motorcycles away from their bodies as they exit corners to allow for more grip on the rear tire. You may have read about helping “steer” the bike into corners by applying weight on the inside foot peg. All of these advanced techniques showcase the influence of an active rider on the handling of the motorcycle.

Dirt riders and touring riders tend to keep their bodies upright and push their motorcycles down into corners to make them turn. For a given speed and radius of corner, the motorcycle may quickly run out of tire or clearance. Track riders tend to adopt a “hanging off” style of riding, popularized by Jarno Saarinen in the early 1970s and later made famous by Kenny Roberts Sr. This shifting of the center of gravity allows the motorcycle to remain more upright, with a larger contact patch for the tire. This shift of centre of gravity is beneficial for less aggressive riders as well.

For motorcycles that are oriented towards street, sports and on/off road use, and depending on the style of seat, it may be possible to move your bottom towards the inside portion of the seat, while keeping the rest of your body in line with the motorcycle. Assume the position well in advance of the corner so as not to upset the motorcycle in the corner.

For those with larger touring style or custom seat configurations, moving the lower part of the body may be difficult and in this instance, more of the emphasis will be on keeping a central

seating line, and using leg pressure and some arm control to provide input. Remember, smoothness is the name of the game.

No matter what style of motorcycle you are riding, keep your head level with the horizon and your arms bent. Your feet should rest with the balls on the footpegs (again depending on the style of motorcycle), moving only to change gears or use the rear brake, and then returned to their normal position. Your front brake should be adjusted so that you could simultaneously work the throttle and brake at the same time if necessary. Resist the temptation to anchor your movements with the handlebar or with your outside knee on the side of the gas tank.

Once through the apex, begin the process in reverse, with most concentration on getting the motorcycle upright and accelerated smoothly.

3.5.4 Cornering Basics

As with virtually any form of riding, any corner can be divided into three basic segments or events: turn-in, apex, and exit.

Turn-in - probably the most important part of a turn, as this dictates where you exit, how fast you exit and how balanced you exit. In terms of events and actions taken this is where you will have completed your braking and downshifting, and begin to turn into the corner. The initial turn-in point is determined by where you want to apex the corner.

Apex – while often defined as the mid-point on the inside edge of a turn, in reality the apex of a corner is not so much a specific point, but an area of the track, typically where you come closest to the curb, curb-feelers or grass.

Exit – this is where the preparation for the corner pays off. The throttle is opened, the bike is straightened, and the rider shifts back towards the centre of the seat. As the throttle is opened and bike allowed more upright, the tires have more grip, the weight shifts towards the rear, and the suspension unloads in the front and squats slightly in the rear.

3.5.5 Eyes and Cornering – The Way Ahead

As discussed under the Situation Awareness section, it is very important that you keep your eyes wide open, and the mind on full receive mode. This is particularly true while cornering. The following sequence should be followed:

- Keep your eyes in *soft focus* (relaxation of any effort to focus your eyes on one object in your visual field) – look out towards the corner and beyond. As stress levels increase, your peripheral vision tends to close down, so relax!

- Move your eyes through the braking zone and turn-in point
- Move your eyes to the region of the apex, but only after braking is under control
- Be sure to note where the apex is, before arriving there.
- Just before arriving there, lift your eyes gradually (transition) towards the exit of the corner (an abrupt or sudden shift in focus will likely disrupt the physical/mental balance that is essential).
- Do not focus your eyes during these sequences, your (pre) programmed mode of operation (see below) should be running (on autopilot) and corrections should be made without disrupting the overall sequence
- Be visually and mentally aware of the space around you (Situational Awareness) and this does not mean just worrying about who may be overtaking you. Use your peripheral vision, and other senses.
- When you do look towards a given region (the next objective), turn your whole head to face the direction you want to go in and if you are looking towards the apex, then turn your head to face the apex.

3.5.6 Talking Yourself Through A Corner

Working through a corner is a combination of physical and mental activities, with specific events. In essence, the following are the major events:

- Off the throttle
- On the brake
- Downshift
- Off the brake
- Turn in
- On the throttle
- Exit out on track

Virtually all individuals who ride on the track will, at some point in time, begin talking themselves through corners – it is not a sign of weakness or lack of knowledge, but a time proven ‘mantra’, especially on tracks which are technical in nature and require a lot of physical activity and mental awareness. As for all riding, it is essential that the mind, and body be in sync, or as close as possible – track riding is no different. Remember:

“Smoothness – Consistency – Concentration”

Equilibrium = Big Smile!

3.6 Tutorial 5 - Track Day Techniques, Tips and Traps

Before you ride

- A back protector (separate or part of the jacket) is highly recommended.
- Bring shade (hat as a minimum) for off-track periods.
- Come with someone who can help you get your things home in an emergency.
- Bring plenty of (hydrating) fluids and light (energy giving) snacks to consume.
- Tape over your speedometer - you won't need it and it is distracting (trust us).
- Bring tools, and tape – duct tape works, but painter tape is better for plastic lenses on lights.
- Come with your tires slightly over-inflated, and bleed them down to the appropriate level.
- Bring extra fuel if possible.

On the track

- Relax - easier said than done, especially before the first time you go out on a track: but the more you can relax and get into the mind set of what you have to do, the better.
- Corners - when approaching a corner, always try to look through it toward the exit point, i.e. where you want to end up. As a rule, your bike will go where you are looking, so if you look at the tire wall, you will probably end up in the tire wall (target fixation).
- Corners - if you enter a corner too fast and half way through it you feel that you will not make the turn, DO NOT *grab* for the front brake to slow you down. While you have the bike leaned over, grabbing the brake runs the risk of the front wheel locking up, resulting in a low side type crash - this is a very common type of crash. If you think you are going too fast DO NOT PANIC, and lean the bike over further - 99 times out of 100 you will make the corner - REMEMBER - SLOW IN, FAST OUT
- Avoid false neutrals - Make positive gear changes
- Commuter Foot Syndrome - tuck your feet in when riding on track. Ideally you should have the ball of your foot on the pegs when cornering. Obviously you will have to move your feet to change gear and use the rear brake. If you watch professionals, you will see that they very often adjust their feet position in anticipation of upcoming actions.

3.7 Training Review / Confirmation

As part of the track day schedule, on and off-track exercises will be conducted. All sessions will include review and confirmation activities. If you are in doubt about any instruction given or demonstrated – ask.

In some instances, one on one instruction may be necessary and will always be done in a positive and constructive manner.

3.8 Venue and Activity Specific Information

Most of the following Appendices have been tailored for this initial BMW Club of Ottawa On-Track Rider Training event and are specific to the venue, and planned activities.

As should be done for the information provided above, please read, digest and reflect upon the information contained in the provided appendices – doing so will result in you being better informed, better prepared, and a more enjoyable day at CMP.

APPENDIX A - TRACK EVENT SCHEDULE (DRAFT)

3.9 General

Due to ongoing planning and the need to confirm details with both track staff and car club leads, a firm schedule will not be available until closer to the actual event date. Current planning will see six to seven sessions conducted during the day. The early sessions will be conducted using the West course and paddock area, with an anticipated move to the East course area after lunch. The final two sessions in the afternoon should be conducted using the full 22 turn, 5.05km track.

In general, each session will be about 45 minutes in length: 10 minutes for introductions and tutorials, 20 minutes of continuous activity (track or paddock) and as needed, the remaining 15 minutes will be for questions/answers, debriefs, transition to other areas, etc. Given the nature of most exercises, it is felt that 20 minutes is a good maximum to work with. While every effort will be made throughout the day to optimize track and activity time, the activities conducted will take a lot of concentration and energy, so it is important to provide recovery time.

3.10 Groupings

Based on current registrations and information known, the plan is to have three training groups, along with the Coaching and Exercise groups, all of whom will use the track throughout the day. Group A will be those with little or no advanced or track riding experience, Group B will be for those who are experienced and may have participated in advanced rider training or other track training events, and Group C will be those individuals who are well experienced and have previous track training or track participation experience.

Although initial grouping assignments may be done based on known information and the information provided in the Rider Survey returns, it is likely that there will be changes early in the day and possibly throughout the day. If you have any questions about the process, please ask, as soon as possible.

The Coaching group will consist of the Lead Coach, Coaches and Guest Coaches, all of whom are contributing their time to this initial Club track event. The Exercise group will conduct the paddock exercises and some of this group will also likely be present on the track as part of the Coaching group. The Support Group will provide ongoing logistical support throughout the day.

3.11 Planned Schedule

As noted above, the schedule will not be finalized until closer to the actual event date. However, the following schedule will hopefully provide a good overview of the activities to be conducted and approximate timings:

7:30 to 8:30 Registration, Waivers and Tech.

8:30 to 9:00 Track Briefings.

9:00 – 9:45AM, West Track, Warm-up Exercises. Each group assigned a section of the course. This will allow the groups to start using the track immediately in a controlled, low speed environment and allow coaches and participants to get to know each other.

9:45 – 10:30AM, Session One, West Track, Skill Building Exercises, part or full use of west track, with controlled group runs.

10:30 – 11:15AM, Session Two, West Track, focus on cornering and techniques.

11:15 to 12:00, Session Three, West Track, focus on building momentum, cornering and timing techniques and smoothness.

12:00 to 1:00PM – Lunch Break. Given the distance from facilities, the plan is to order Box Lunches for the day, with costs to be shared by the two clubs. Please indicate on the Survey Form if you wish to participate in the box lunch program. Alternatively, you can bring your own food. Updates as needed will be provided via separate mailings.

1:00 to 1:45PM – Session Four, East Track – longer track, familiarization with the additional corners and straights, controlled group run, continue skill building.

1:45 to 2:30 – Session Five, East Track, by group, with changes in lead and positioning within group to optimize runs and opportunities for the coaches to monitor and provide subsequent feedback to group and individual.

2:30 to 3:15 – Session Six, Full Course, controlled track run, by group, at intervals, allowing all activities conducted during previous sessions to be put together on full course.

3:15 to 4:00PM – Session Seven and Final, Full Course, track run, with all participants, coaches will be on track as well. This may be an optional session.

4:00 to 4:30 – Activity Hot-Wash, all motorcycle Track Event attendees.

All sessions will be scripted to the degree necessary for safety and to optimize the learning curve, a Lead and Tail will be assigned to each group, with additional coaches for mentoring.

APPENDIX B - CALABOGIE MOTORSPORTS PARK

B.1 Introduction

Calabogie Motorsports Park or CMP officially opened in mid 2006 after a long design, approval and construction effort. The track itself was designed by Alan Wilson, a renowned US track architect. This is the 22nd Wilson Motorsport designed track facility. Alan has designed or provided management consulting services for many Canadian, US and International race circuits, including Le Circuit Mont Tremblant, Barber Motorsports Park, Mid-America Motorplex and Arizona Motorsports Park. Alan has stated that, “The Calabogie Experience will in many ways be a unique, and perhaps my personal favourite. This facility will become the premier driving experience in North America”.

B.2 Features

- Main course is **5.05km** with **23 turns**
- Longest straightaway is **610m**
- 20m (65 ft) of elevation changes over the 5km course
- Some corners have up to 6 degrees of camber banking
- Can be split into two smaller circuits (when so facilitated) to accommodate two groups at a time
 - 2.2km West course (basic), with a 1.2 acre Paddock
 - 2.81km East course (more technical), with a 3.75 acre Paddock
- Run off space limited on some of the toughest corners
- Track is almost completely lined with Armco guardrail
 - Prudent measure for cars
 - Can be dangerous for motorcycles and riders
 - Should only be problematic in some braking areas and corner exits
- Medical trailer on site and a permanent stationed ambulance (1st response)
- Perth and Arnprior care facilities are less than 30 minutes away
- Technical track, requires knowledge and rhythm to make good runs
- Steep learning curve, but rewarding when rhythm is achieved
- Track will reward the patient rider and will punish the hasty
- An excellent ‘learning’ track to practice and master the basics, advance skills and develop rhythm and confidence
- Noise guidelines set by OMB (must meet provincial standards, in essence - street legal standards)
- Located approximately 2 kms off Hwy 511, southern edge of Calabogie Resort area
- Internet: www.calabogiemotorsports.com

B.3 Overview

As you can see from this aerial view of the Park, it is a beautiful location, just south of the main Calabogie Resort area and about 2kms east off Hwy 511 (another favourite riding road). This track is unique to North America and perhaps the world in its design, technical challenges and location.



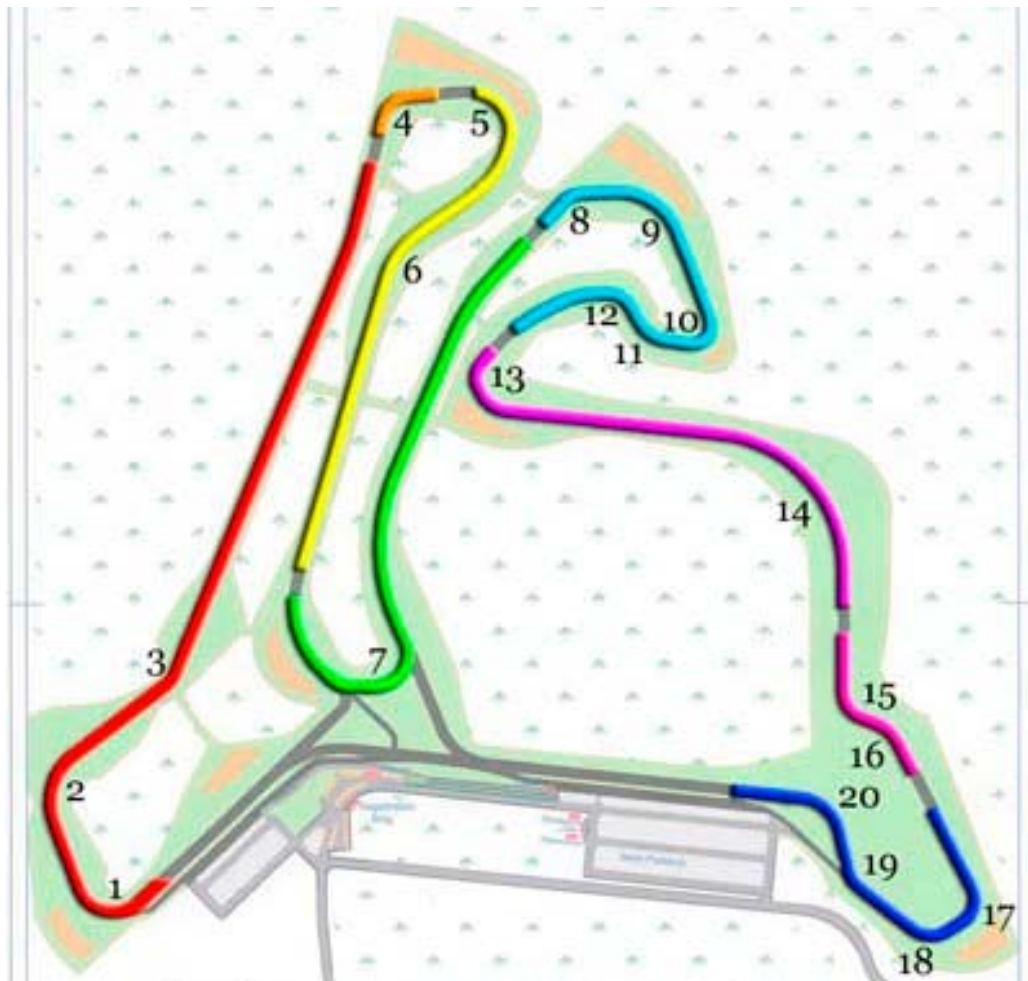
Figure A-1 – Calabogie Motorsports Park – West Track at Top, East Below

The track can be run as a single long course, or split into two individual courses, West and East, each with their own paddock areas, features and challenges.

You can see the larger East paddock area in the lower centre of the picture, and the smaller West paddock area in the upper left of the picture. The transition/separation area between the two courses is clearly visible as well in the Kink and Temptation corner area.

B.4 CMP – Corner Numbering and Section Coding

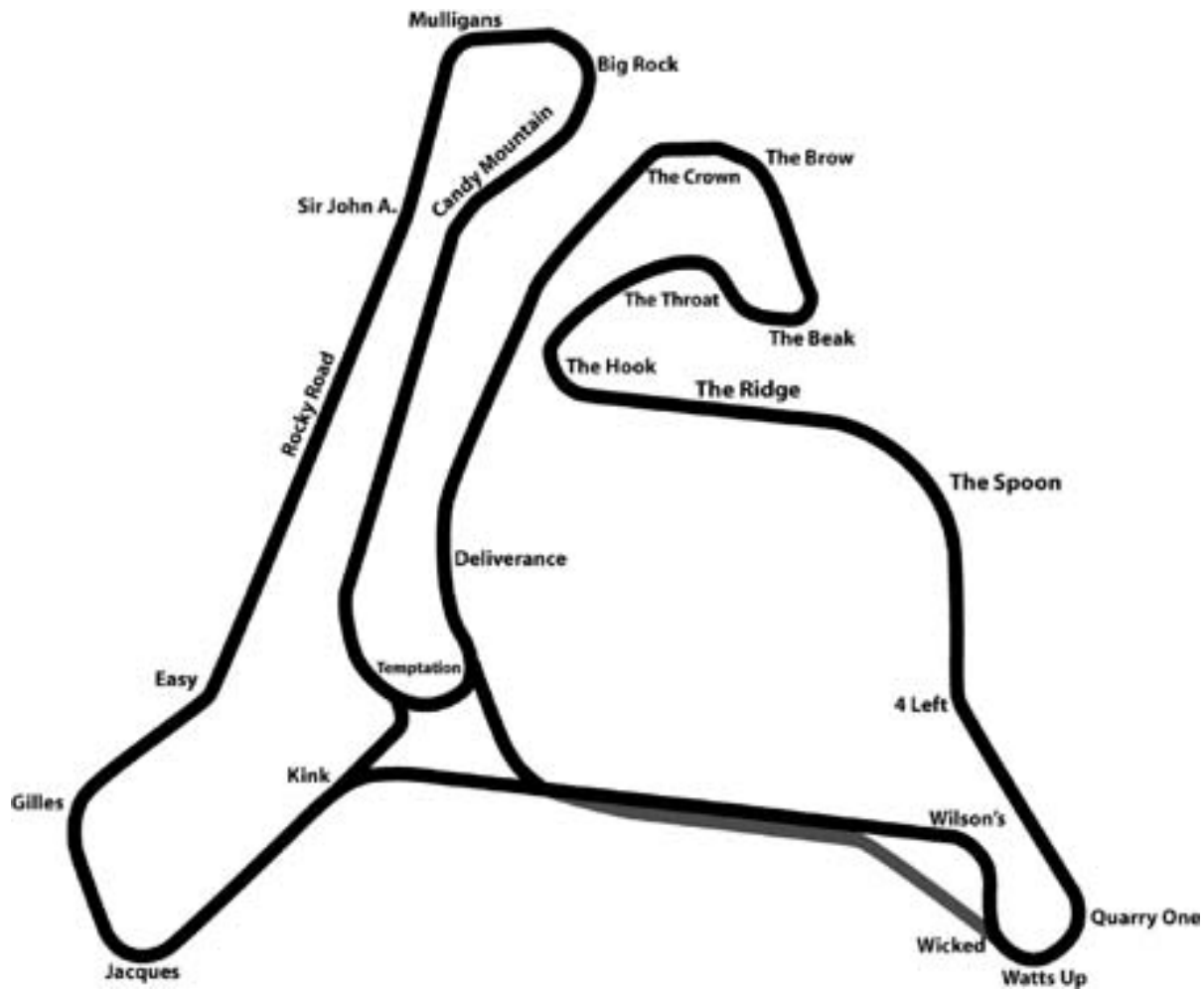
The following graphic clearly shows the West and East courses, with section colouration, and corner by corner numbering.



APPENDIX C – CMP - CORNER BY CORNER

This Corner by Corner walkthrough of CMP is provided here, with some motorcycle specific edits and rider comments, for information and insight purposes. It is important to remember the caveat provided in the following paragraph.

First let me say that the proper line at Calabogie will be the topic of discussion for a long time to come. What follows is a usable and safe line through the various corners. Further experimentation will no doubt change things, but this will help get around the track safely.



KINK – the first corner you meet as you come down the front straight. It is a fast, downhill left hander. Depending on your speed, light to moderate braking is required. Be careful not to turn in early, you will run out of road and face a daunting tire wall. Be wary of vehicles entering the track on your left, pit out merges with the line into Kink.

PIT OUT – Comes out on the left side of the track. Stay left past the end of the blend line and look in your mirrors. As you exit the pit lane you can't see traffic due to the tall concrete pit wall. The exit of kink takes you to the right, bring the vehicle back to the left for the straight line down hill braking zone for Jacques.

JACQUES – at the bottom of a fairly steep hill. Braking is done parallel to and very close to a concrete wall. Jacques is a roughly 90 degree right hander. The exit of Jacques takes you up-hill to the turn-in point of Gilles. Probably named for the Villeneuve brothers, you can help remember the names by thinking of the rhyme “Jack and Jill ran up the hill”.

GILLES – is a blind right hander. You cannot see the apex from the approach. If you wait until you can see it, you will have turned in too late. On your first laps, I advise doing exactly that until you have established some reference points of your own. Gilles is a late apex to set you up for Easy.

EASY – as you exit Gilles you should be parallel and close to the curbing on your right. Look left early for the apex of Easy. There is a tendency to be late here, if you turn in a little too late, no harm is done since the track is 40 feet wide. Done correctly, a little earlier than late, one can accelerate briskly from the exit of Gilles, starting long before the apex of Easy which is, in fact, easy.

The exit of Easy takes you onto Rocky Road, the longest straight at Calabogie. Glance at the array of boulders along each side. The straight leads to Mulligans which is a compound curve involving Mulligans, Big Rock and Candy Mountain. These corners like many others are linked and each must be negotiated with regard to the next.

MULLIGANS – There are several lines possible here. I prefer to approach lined up near the left side of the track which curves slightly to the right (a corner called Sir John A, which isn't much of a corner), more like a slight bend. Lining up parallel to the left side will take you into Mulligan's close to and parallel to concrete curbing on the right side. The approach is nearly

straight in. Braking and downshifting must be done before the end of the curbing. Gently turn the vehicle in making a curve which will pass close to the left hand edge about two-thirds the way around. Turn your head to the right to see the entry of Big Rock. By the way, leave a good safety margin on your left as putting a wheel off here may result in running off the track and a possible spill.

BIG ROCK – named for the huge rock perched high above the track (and looking rather precarious) is tricky. You need to turn in more from the curve you established in Mulligans and line the vehicle up parallel to the right hand side. The track is banked in your favour here and in spite of the tightening curve you can apply progressive acceleration up the hill – note I mean PROGRESSIVE, don't accelerate hard! Exiting Big Rock, turn in gently to the left, aiming for about mid track. Look left for the apex of Candy Mountain and get ready to turn in little more for the apex of Candy Mountain.

CANDY MOUNTAIN – is a totally blind apex at the crest of the hill leading from Big Rock. It is a fast left hand corner and supports progressive acceleration all the way from the exit of Big Rock. Be careful, it is easy to turn in too early here. If in doubt, turn in a little late, the exit is wide. Too early and you will be headed for the grass.

The exit of Candy Mountain leads to a straight, stay right and watch for the brake markers which signal the entry to Temptation.

TEMPTATION – I suspect named because we will all be tempted to turn in early. Temptation requires lots of patience. It is a slow left hand roughly 180 degree carousel-like corner. You will be distracted by cones blocking off a road used to connect the various layouts. The easy and safe line is to drive around the outside about four (4) feet from the right hand edge until you can see the exit. This line makes Temptation into a single late apex (rather like Carousel at Tremblant only much slower, for those who have been on that track). Be careful on the exit, do not turn in early or you will run out of road rather suddenly. Resist temptation and make sure you turn in fairly late for the apex at exit. On exit bring the vehicle back (to the left) to mid track to prepare for Deliverance.

DELIVERANCE – exiting Temptation we climb up hill (did I mention that this track is a wonderful roller-coaster?) to a fast right hander. Think of “deliver me from temptation”. Deliverance is not hard, but don't turn in early, the track rises towards the corner and falls

slightly as you exit. If you go in hot and early, you'll have to reduce speed to avoid running out of track. Reducing the throttle here may have nasty consequences because the vehicle is light here. For the first few laps plan to take it a bit late for safety. Every time I went through there I reminded myself that the corner should be called "don't go off the gas".

Deliverance exits into a straight leading to the Duck's Head. This is another series of linked turns. Looking at a track map the similarity to the head of a duck is obvious. While driving down the straight, stay mid track to avoid having to turn slightly to the right to approach the turn in point. The straight leading to Ducks Head is not quite straight. Approaching from mid track will take you to the left side and the turn in point for the first of the linked turns.

CROWN AND BROW – These are essentially two apexes of a single turn. Approach from the far left and dive down to the apex of Crown. Since you can see both apexes from turn in, arrange to make a smooth arc touching the apex of Crown and then Brow which is also a right hander. As you gain confidence and speed, the vehicle will track out from the apex of Brow, but there is more than enough room as you head up the short, fairly steep hill to The Beak. You will brake quite hard for the entry to Beak.

THE BEAK – is a very, very late apex right hander (comparable to the right hand 'ess' at Tremblant, again for those who have ridden it) with a slight favourable banking. The track runs downhill along the curbing. The Beak flows naturally into The Throat.

THE THROAT – is a left hand, down-hill 3rd gear turn which follows closely on The Beak. The clipping point is at the near end of the concrete curbing. While brisk acceleration is possible, resist temptation because you will be unable to brake enough for The Hook which follows a short distance away. Hook is not visible from the apex of Throat. The Throat is an early apex and doing it right brings you right to the turn in point for The Hook.

THE HOOK is a tight left-hander leading uphill. Approaching it, you need strong braking (that's why we don't want to blast out of Throat). Look left and aim for the clipping point which is at the near end of the concrete curbing. Exiting Hook, the vehicle will move to the right on an uphill straight leading to Spoon. Bring the vehicle smoothly back to the left. This section called

The Ridge is the highest point of the track and if you have time to look around (later, not initially), it is very high indeed.

SPOON – One of the most exciting turns on the track. Spoon is a right hander going downhill with very favourable banking. Spoon is another blind apex. Approach from the left and turn in gently. Done right, you'll find yourself about mid track headed for the now visible apex. You will see the tilt to the right - plan to use it. Do not get to the left of center because the banking on that side is unfavourable. As you swoop down towards the apex, strong acceleration is possible due to the banking and the compression.

4LEFT – What a great name for a corner! It is a fast left hander leading to a downhill straight. I love the name because it means “4 corners left”. Depending on vehicle type, a lift or light braking preceding turn in will do. You can take this one a bit (not a lot) early as there is plenty of room to track out heading down a steep hill into the Quarry section. Caution, for reasons I can't explain, the braking zone down the hill is slippery (got into ABS rather easily). Perhaps the steep slope is a factor putting too much weight on the front of the vehicle leaving the rear with less grip. In any case, you will need strong braking down the hill to slow the vehicle for the entry into Quarry.

QUARRY COMPLEX – aptly named because a glance make it obvious that you're headed down into a quarry pit. Quarry is in fact a series of linked turns, consisting of Quarry One, Watts Up, and Wicked.

QUARRY ONE is a right hander which is immediately followed by Watts Up – another right hander. These two form roughly a half circle, safely taken as a single late apex although a double apex also works. Using the single late method, turn into Quarry One aiming to be a car width left of mid track. Make a smooth arc past Watts Up. Don't try to accelerate – constant speed is the ticket. If you do it right, you will find yourself at the optimal turn in point for Wicked. Caution, there are no curbs (as of this writing) on the outside of the corner and if you put a wheels off on your left the terrain is ugly. Don't make a mistake.

PIT IN – if you go straight ahead instead of turning right for Wicked, you are headed for Pit In. Vehicles leaving the track should make a Pit In signal no later than Quarry one.

WICKED – is a right hander following Quarry One and Watts Up and it is the third in the series of linked turns. Wicked is a right hander from the exit of Watts Up. It is a late apex and if you haven't done Watts Up perfectly, or if you used the double apex method, you will have to turn in more. If you do manage the previous turns correctly, you will simply continue the smooth arc you started two turns ago. As with the previous linked turns there is great flow here.

WILSON'S – probably named after Allan Wilson (the track designer who did the redesign of Tremblant as well). This is a tricky left hand blind apex corner leading to the front straight. Getting it right means exiting Wicked close to and parallel to the curbing on the right side. Be extra careful since you'll be tempted to turn in too soon and be rewarded with a heroic maneuver to avoid going off because you have run out of road! Done correctly you can accelerate before the apex and carry good speed onto the front straight. Turn in early and that velocity will be a liability as you run out of road.

Wilson's leads to the front straight and you will want to bring the vehicle to the right to prepare for Kink.

That completes one lap of Calabogie Motorsports Park.

Note – the preceding narrative is an extract from a posting on the CMB Website and while it was originally written from a four-wheeler perspective, the information provides some very good insight and, warnings, corner by corner.

For riders, some aspects will change due to the unique handling, cornering and braking characteristics of the respective motorcycles being ridden on the course.

Remember, this track training day is not about speed, but about skill building, learning from the coaches and other participants, safety, and sharing the unique experience that is CMP.

APPENDIX D - PUTTING IT ALL TOGETHER

D.1 General

Calabogie Motorsports Park or CMP is a unique track that combines speed and flowing corner combinations. CMP is highly technical but it rewards smooth, patient riding and is designed to test riders concentration and vehicle control skills throughout the entire run. Although formal classroom training will be limited, a track walkthrough, using video and virtual walkthroughs, conducted by professional riders who have ‘been there, done that’ at CMP, will be conducted as part of the track training.

All the basic technical information in this section and Appendices A and B has been provided courtesy of CMP and other contributors and will hopefully permit the acceleration of the learning curve for those new to the track, thus optimizing time limitations. During the training itself, additional technical points and valuable riding tips from professional riders who have ‘been there, done that’ at CMP will be provided with a strong focus on mentoring.

D.2 The Track Trip

D.2.1 The Video Run Through

Depending on the training resources available, video of the track will be used to familiarize participants with the overall course and the West and East tracks, as will be used for the event. Participants who have access to a high-speed internet connection are encouraged to take advantage of the media posted on the CMP website, www.calabogiemotorsports.com

D.2.2 The Turn by Turn, Feature by Feature Walk Through

Appendix B will be used as the guide for this walk-through. The track day walk though will be done by individuals who have ridden the track previously and who have substantial track experience, making them well qualified to conduct the walk through.

D.2.3 Track Day Tips N Tricks

In addition to the track information provided in this document, additional time will be spent during the sessions so that those individuals who have spent time running CMP in the past and have other track experience, can provide some valuable insight, tips and tricks to help you be aware of the potential traps.

APPENDIX E - OTRT TECHNICAL REQUIREMENTS & CHECKLIST

E-1 Part 1 - Safety Gear and Motorcycle Technical Requirements:

Every rider and every motorcycle going onto the track must pass Technical Inspection (Tech). Upon passing Tech, each motorcycle will receive a sticker to be placed on the upper right hand portion (rider's perspective) of the front fairing or front fender, and each rider a sticker for the helmet.

The inspection and requirements are designed to help ensure your personal safety, and also to minimize the disruption that might occur in the event of a mishap on the track. Track clean-up is time consuming for all participants.

Note that the requirements of the insurer and the track management may supersede these recommendations.

Personal Safety Equipment (PPE) Requirements:

- **Full Coverage Helmet** - Snell or DOT approved with snap-close face shield and not more than five (5) years old (three is the recommended standard). *Note - for this event, given the nature of this activity (training), and assessed risk, flip style helmets, such as the Schubert and HJC Symax will be allowed, but they must meet the Snell or DOT approval standards and age limitations per above. Please ensure your helmet is a good fit, the padding is intact and the chin strap in good working order.*
- **Gloves** - Full coverage gloves that cover the wrist cuff
- **Boots** - must cover ankle and ankle cuffs
- **Jacket & Pants** – Leather/heavy synthetic textile motorcycle jacket and similar pants, preferably with armor and/or back protector, and preferably zip-together.
 - Acceptable - Joe Rocket Phoenix, First Gear Mesh-Tex, BMW Wind Machine. Heavy Vented items such as BMW Aeroflow, perforated leather, etc. is acceptable
 - Not acceptable - Vanson Textile mesh jackets and other similar “light vented” or “free air” equipment is not allowed. Natural fiber clothing, such as jeans are not acceptable.
 - EMPTY THE POCKETS, other than for essential identification items
 - If in doubt, bring more than one option.
- All riding equipment must be in very good condition - this will be strictly enforced.
- *The fundamental rule regarding clothing, boots and gloves is “no exposed skin”. Be sure you gear meets this standard when you are on your bike, not just in front of a mirror.*
- *We plan pre-inspection dates in town. Pre-inspection is strongly recommended if you are in doubt*

Motorcycle Requirements:

- Prepare your bike in advance
 - Self preparation
 - Take advantage of the Pre-Event Preparation (see below)
 - Have participating dealer prepare per checklist
 - Motor Sports World (MSW)
 - Ottawa Goodtime Centre (OGC) - not yet confirmed
 - Bring tools and supplies with you to the extent possible – our stock may be limited.

Your motorcycle should:

- Be clean and in very good mechanical condition, no fluid leaks whatsoever – oil, coolant, hydraulics, or fuel
- Have bodywork attached in a safe manner or removed.
- Have saddlebags, tank bags, windshields and auxiliary devices such as footboards, and highway pegs removed where possible. No auxiliary fuel tanks. No accessory in-helmet radios or communicators.
- Have kickstand and centerstand in good working order, retracting and holding in place (minimum), or it must be safety wired (better) or removed (best).
- Beware of sharp edges. Exposed licence plates should be removed and in this instance, it is typically better to actually remove both the license plate and holder mounting. Where the plates are mounted into a shell or fairing of sorts (touring models), make sure the plate is securely mounted.
- Have the mirrors, headlights, taillights and turn signals disconnected and taped or removed (you may choose to do this at the track)
- **Have new condition tires** with plenty of tread depth. You will not be allowed on the track if your tires demonstrate excessive wear. Our plans include a trackside compressor for your convenience.
- Have brakes operating properly and have plenty of brake pad material.
- Have a self-closing throttle from all handlebar positions. Make sure the left grip is tight on the bar. Levers and controls should be tight and in good order.
- Have a properly adjusted chain (if applicable) and in good condition.
- **NO BIKE-MOUNTED CAMERAS** without CMP permission.

E.2 Part 2 – Safety and Technical Inspections:

Pre-Event Preparation

Two pre-event preparation events are being offered by David Makin at his residence to assist participants to prepare their individual motorcycles for the track event. These two events are planned for the evening of Wednesday, 2 May and the morning of Saturday, 5 May. It is hoped that by taking advantage of these two sessions, it will speed up the track technical inspection process on Monday, 7 May. Final timings, location, etc, for these two sessions will be provided by email, the Club website and/or by phone.

Motor Sports World, 613.225.2892 is providing track event inspections, while Ottawa Goodtime Centre has not yet been confirmed. In any case, call the respective Service desks and identify that you are calling regarding the BMW Club of Ottawa OTRT Inspection, as both dealers have copies of the attached checklist. While the dealers will do everything to facilitate the inspection, please appreciate the time of season and do not leave it until the last day and please take in a copy of the inspection checklist (just in case).

If you wish to do your own preparation, then the minimum preparations as outlined above will need to be done prior to the event.

Track Technical “Tech” Inspection

The final inspection for both your bike and riding gear will be on the morning of the event. Tape and tools will be available as required, as well as storage for accessories removed.

Our inspection in no way guarantees your safety in this event.

You are responsible for properly preparing your motorcycle for safe operation and it is your responsibility to check your motorcycle to assure that it will pass our technical inspection.

Re-Tech Inspection

In the event of a crash, your bike and gear must be completely re-teched before you are allowed to proceed.

Failure to adhere to any tech requirements or procedures at any time will disqualify you from riding in this event and your money will not be refunded.

If anything attached to your bike touches the ground or is observed to touch the ground you will be asked to remove the offending part or ride in a manner that will not drag the part.

E.3 Part 3 – Track Technical Inspection Checklist and Certification

Form to be completed by the Tech Inspector

Rider's Name: _____

SAFETY GEAR

- Helmet - Snell or DOT approved, good condition and fit, tight fitting shields
- Gloves - full coverage, in non-torn condition, covering the wrist cuffs
- Boots - in non-torn condition, covering ankle/cuffs
- Clothing – leather or heavy textile motorcycle jacket and pants, full coverage suits

MOTORCYCLE [Make _____ Model _____]

Bodywork and Frame

- All bodywork/fasteners tight/secured
- Centerstand either removed or return spring in good working order
- Kickstand either removed or return spring in good working order
- License plates removed or securely taped up, sharp edges taped over
- Headlights, taillights, mirrors, and turn signals taped or removed
- Footpegs secure (tight)
- Quiet street-legal exhaust system (NO OPEN PIPES)
- Seat firmly attached

Brakes, Controls and Drive train

- Chain adjusted and lubricated properly (if applicable)
- Rear sprocket wear minimum (if applicable)
- Firm front and rear brake lever feel
- Brake pads have acceptable life remaining
- Throttle is self-closing at all handlebar positions
- Controls, Clip-ons or handlebars tight
- Clutch lever action acceptable
- Steering head, wheel bearings in good condition

Fluids

- No fluid leakage - fuel, coolant, oil, brake fluid
- Full tank of gas (arrive with a full tank and bring extra if possible)
- Oil level acceptable

Tires

- Tires in new or nearly new condition
- Tires properly inflated

PASS. Apply Tech Sticker on upper right front fairing (or front fender) and edge of visor or chin-bar of helmet.

APPENDIX F – RIDER QUESTIONNAIRE

Name _____ Telephone _____

Address: _____

E-mail _____

Emergency Contact:

Name: _____ Relationship _____

Telephone: _____ At track? Yes _____ No _____

If you have any serious health issues or medications that emergency workers should be made aware of in the event of an incident requiring care, please describe these matters separately and place in a sealed envelope.

Please give us some brief background information:

You will be riding a _____ Owned For _____

Have you had previous on – track experience?

What are your expectations for on – track training event?

Have you previously attended formal motorcycle training, such as the Basic Rider Training, Advanced Course, MRC course, etc.?

Will any other individuals be attend the track event with you? If so, their names will need to be submitted along with this survey so that the track access list can be prepared.

Note - do you wish to participate in the Box Lunch Program: _____

APPENDIX H - TRAINING ASSESSMENT FORM

((to be drafted – the assessment form will be available at the track))